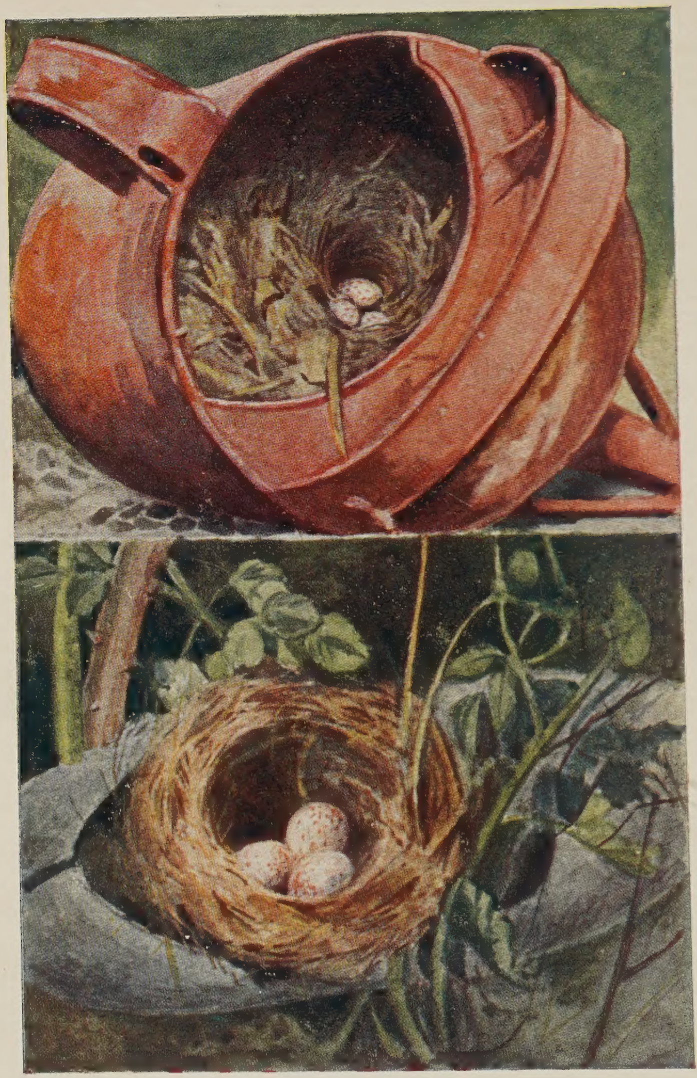
# EVERY BOY'S BOOK OF BRITISH NATURAL HISTORY

BY PERCIVAL WESTELL,
F.L.S., M.B.O.U.

WITH AN INTRODUCTION BY THE
RIGHT HON. LORD AVEBURY

109 ILLUSTRATIONS



Strange Nesting Places.

FIG. 1.—ROBIN'S NEST IN A WATER-CAN.

FIG. 2.—IN AN OLD SHOE.

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# OF
# BRITISH NATURAL HISTORY

BY

W. PERCIVAL WESTELL

F.R.H.S., M.B.O.U., ETC.

AUTHOR OF

'A YEAR WITH NATURE,' 'COUNTRY RAMBLES,' 'BRITISH BIRD-LIFE,' ETC.

WITH

CHAPTERS AND NOTES ON NATURE-PHOTOGRAPHY AND
ONE HUNDRED AND NINE ORIGINAL ILLUSTRATIONS

BY

THE REV. S. N. SEDGWICK, M.A.

AND AN INTRODUCTION

BY

THE RIGHT HON. LORD AVEBURY

P.C., D.C.L., LL.D., F.R.S.

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1907

To

MY MOTHER

AS A TOKEN OF FILIAL AFFECTION

I DEDICATE

THIS BOOK

W. P. W.

# INTRODUCTION

BY

## THE RIGHT HON. LORD AVEBURY,

P.C., D.C.L., LL.D., F.R.S.

TO all those who love the country, and appreciate the beauties of Nature, it is very pleasant to watch the growing demand for popular and elementary books on country life. The present tendency to flock into town and cities is regrettable both from the point of view of the character and health of our people; and it is a constant surprise to the naturalist that any one in his senses should prefer the smoke and turmoil and noise of streets by day, and the glare of gaslight, and still worse of arc lights, by night, to the peace and pure air, the sunshine by day and no less beautiful moonlight by night, which we may enjoy in the country. It is true that towns have theatres and music halls, but the country has the murmur of water, the ripple of the sea, and the music of birds.

Cities no doubt have museums, though it will hardly be alleged that to our rural population they are any particular attraction.

Moreover, while museums are absolutely necessary for the study of Science, and to those who can appreciate them add much to the interest of existence, still every field and wood, every pond and lake, every river and seashore is itself a museum, a Museum, moreover, not of skeletons and stuffed animals, but of living, and let us hope of happy, creatures.

One way of bringing the people back to the soil, and carrying even those who live in the city to the woods and fields, whenever they have a holiday, is by bringing home to our country men and country women, firstly, the beauty and interest of even our commonest animals and plants, and secondly, I hope, that it is much more interesting to watch than to kill them.

Moreover, the study is as inexhaustible as it is interesting. There is not a single animal or plant the whole life-history of which is yet known to us, not one which would not pay, repay, and overpay, I will not say merely the study of an hour, but the devotion of a lifetime.

The popularity of Mr. Westell's other books shows that he knows how to interest his readers, and I wish equal success to the present volume.

The photographs are charming, and will add much to the attractiveness of the book.

AVEBURY.

High Elms,
Down, Kent. *July*, 1906.

# PREFACE

MR. SEDGWICK and I for some considerable time past had in our minds an idea for a book on British Natural History and Nature-Photography specially adapted for use by British boys. The present volume is the result. Mr. Sedgwick is responsible for the whole of the photographs, most of them having been taken, with his wonderfully successful home-made camera, in every instance direct from Nature. This was one of the conditions on which I undertook the writing of this book, and my collaborator has faithfully carried out my wishes in every respect. Beyond being responsible for the photographs, Mr. Sedgwick has also written Chapters II. and III. dealing with the Camera and the uses to which it can be put; for the whole of the remaining portion of the work I am solely responsible.

Before commencing my pleasant task of preparing this volume, I conceived various ideas of carrying it into effect. At first my idea was to discard classification entirely, and to write up a series of short, crisp essays upon Nature in her various phases. After mature consideration, however, I thought it best to endeavour to prepare this book in such a way as to put any boy on the right track straight away, keeping nevertheless to my original idea of writing in a popular and understandable manner, so that none who might honour me by a perusal of my work would be deterred from taking up Nature-Study because of the dry-as-dust terminology that might be employed.

Therefore, I hope I have succeeded in my endeavours to deal in a popular manner with the various branches of Natural History treated of, and at the same time that I have not lost sight of the importance attaching to the young student acquiring some knowledge of what is meant by classification, etc. It is most important that any boy who takes up Nature-Study should, in the first instance, have his attention directed in a popular manner, so as to make it the more interesting and understandable; but it is equally, if not more, important that he should understand how animals, etc., are classified, and not dive headlong into any one particular branch of Nature-Study except at the very commencement of the subject.

Whilst endeavouring to point out very briefly how animals, plants, etc., are classified, how plants are fertilized, etc., in a properly authentic and accurate manner, I have I hope succeeded in keeping in view the fact that this volume has been primarily written for use by British boys, though perchance there may be included within its covers something that may interest their elders, too. Beyond that, I hope that the book may be of some service to teachers and others engaged in Nature-Study work.

I have several acknowledgments to make; first and foremost to Mr. F. G. Aflalo's most excellent and useful work entitled *The Natural History* (*Vertebrates*) *of the British Isles*, which charming book of reference I have largely consulted for the chapters on Mammals and Fish, and to which book I specially direct the attention of all students of British Natural History; to Messrs. E. J. Arnold & Sons, Ltd., of Leeds, for the great assistance I have obtained from their wonderful Life-Histories of Fish, Insects, and other forms of British Wild Life; to Mr. W. J. Lucas's two most useful volumes entitled *The Book of British Butterflies*, and *The Book of British Hawk-Moths*; and to my friend Mr. Arthur E. Burgess, F.R.H.S., for most valuable assistance in the preparation of Chapter VIII., more especially as regards the classification, structure, pollination and fertilization of Plants. I also wish to acknowledge my indebtedness to Lord Avebury for his kind introduction, and for many valuable suggestions in regard to the construction of the various chapters included.

W. PERCIVAL WESTELL.

Glenferrie Road,
St. Albans, Herts.
*July*, 1906.

## PREFACE TO THIRD IMPRESSION

I take this opportunity of conveying thanks to those who have so kindly written to me in regard to this book, as it has been quite impossible to acknowledge their letters individually.

The book seems to have supplied a real want, and to Press and Public alike I express—on behalf of the Rev. S. N. Sedgwick and myself—most grateful thanks.

It is a pleasant sign of the times that our work has been received with such marked success, and has been the means of affording intelligent recreation to our young folks.

A few slight errors, which escaped notice in the First and Second Impressions, are here corrected.

*December*, 1906.

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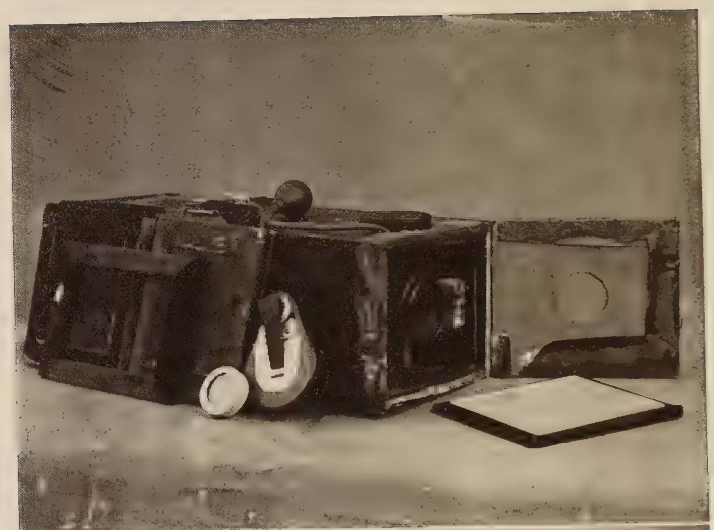
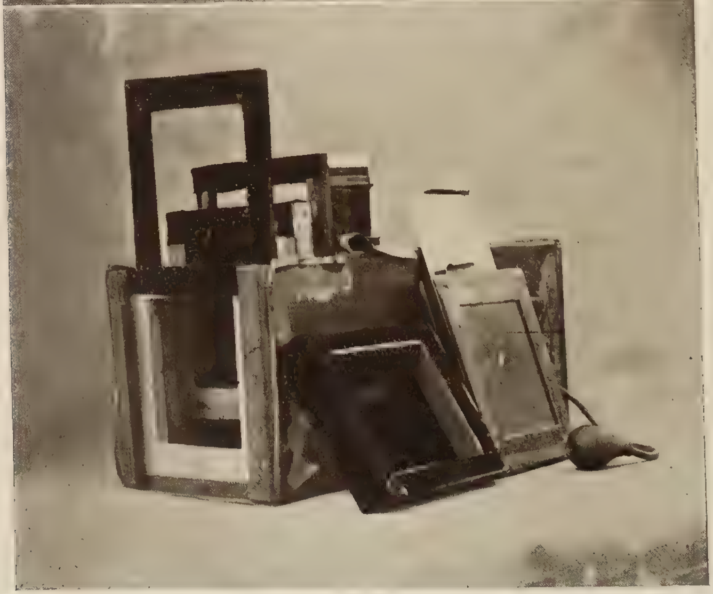




A Home-made Camera.

FIG. 3.—FRONT VIEW. FIG. 4.—BACK VIEW.

[see page 13.

# EVERY BOY'S BOOK OF BRITISH NATURAL HISTORY

## CHAPTER I

## INTRODUCTION

DEAR BRITISH BOYS,

You love the country, I know, and are at all times interested in the wild tenants of the countryside. And when your teacher or parent tells you anything about birds, or mammals, or fish, or plants, you almost invariably ask for more. But why shouldn't *you* go out into the fields, lanes, and woods, and yourselves unfold some of the leaves in Nature's wonderful and ever-open book? Those boys who are unfortunate enough to live in a large city, where the blue vault of heaven may be rarely seen, have little, if any, opportunity for studying Nature; yet it has often come to my notice that boys living in the crowded city—and men and women too—are frequently much more interested in Nature's ways than those who have the great privilege of living in the country. Recently, however, there has been a change for the better, and the time does not seem far distant when boys and girls, and men and women, throughout the length and breadth of the land, will be keenly interested in the many wonderful objects of the countryside. Attached to your schools nowadays you have—or at any rate should have—your Nature-study class, a class formulated and worked on practical lines, and not in the inanimate and uninteresting form which until too recently was the case.

Now, the fact that you are so interested in Nature and anxious to learn something of British wild life, has resulted in my endeavouring to prepare for you in this volume a series of short chapters upon the more important forms of the fauna and flora of the British Isles. It must not be thought, however, that this volume is in any way a complete treatise upon all the subjects of which it treats; that, to say the least, would have been quite impossible in the limits of a fair-sized volume. This book is rather one which will, in a measure, give you an insight into the classification and lives and habits of wild creatures, and act as an introduction to Nature-study, and an inducement to you to take up and pursue the study of Natural History. 'But,' you may say, 'what can

I do to obtain any interest in Nature? I would like to take up such a fascinating hobby, but I don't know how to start.' Now, just ask yourself the question, 'What outlay is necessary for me to take up the study of field natural history? and how can I hope to achieve any continued pleasure and success?' You will probably think of the great naturalists of to-day; you may think that they know everything that is worth knowing of wild life at home, and that there is little scope for one such as you. Now, whatever you do, pray let me entreat you not to be misled on this score. Hundreds of books have been written about Nature, but these—exhaustive as some of them appear to be—are in no way complete, and there are as many of Nature's secrets waiting to be discovered, if we will only take the trouble to look and listen for them, as have been divulged hitherto. Indeed, so far naturalists, both great and small, have only touched the fringe of a great and inexhaustible subject; for the more we learn about Nature the more we find there is to learn, and as we go on probing into her secrets we are struck by the very poverty of our knowledge. I would commend to you the following lines from Pope's 'Essay on Man':—

> ''Twas thus to man the voice of Nature spake:—
> "Go, from the creatures thy instruction take:
> Learn from the birds what food the thickets yield;
> Learn from the beasts the physic of the field;

> The arts of building from the bee receive;
> Learn of the mole to plough, the worm to weave;
> Learn of the little nautilus to sail,
> Spread the thin oar, and catch the driving gale."'

Now, what means are necessary for you to pursue field Nature-study with pleasure and profit? Not making collections of birds' eggs, or birds, or butterflies and moths, or plants, or other objects. There are far too many collectors already, and far too few real genuine field naturalists. What is wanted is more field work, a larger share of attention being accorded to animate Nature and the life of the fields, and less to reckless and indiscriminate collecting.

The only effort, then, that is required to achieve success in Nature-study is the effort of observation. Observation is a grand qualification to cultivate. What does observation do? It quickens the faculties, develops the mind, gives a healthy body, and generally helps you to enjoy your brief life upon this beautiful earth. You walk down a lane; you hear a bird singing—or at least you should do if you are at all observant—don't you want to know what bird it is? Of course you do. And after having discovered what bird it is, you want to know more about it. Where does it build its nest? what kind of, and how many, eggs does it lay? Where does it go to in winter? How are its migratory movements conducted, and why do birds migrate? You observe a butterfly or other insect alight upon some wayside blossom; don't you want to know how it came to acquire its beautiful wings, and why it visits that certain flower; what sort of a caterpillar it once was, and so on?

How eagerly, as April draws near, does the field naturalist and the lover of the country listen for the welcome notes of the delicate little chiff-chaff—just arrived from the shores of the Mediterranean—for the pleasing twitter of the fairy swallow, the liquid notes of the nightingale and the blackcap, or the plaintive cry of the wandering cuckoo!

Year by year the field naturalist delights in the countryside. He notes the arrival of the summer migrants, and the departure of the winter visitors. He may have noted them for many a year, yet as each succeeding season arrives his enthusiasm is not diminished, but rather increased, and sights and sounds which to an unobservant person seem trivial and uninteresting are to the Nature-lover held in high esteem, nay, sacred and very dear. He watches for the first golden petals of the celandine and the coltsfoot; even the despised dandelion finds a warm place in his affection, and he looks forward anxiously again to sitting on that favourite bluebell-covered bank, and taking stock of Nature's treasures. He surveys the surroundings with a critical eye, and notes the forwardness or backwardness of the season; the early or late arrival of summer birds or the early or late blooming of many wild flowers. How he is spurred on for brighter days at the sight of the first butterfly or the first nest of the season! a late frost or two may perchance retard Nature's progress, but the sun increases daily in its power, the air becomes balmier, and fair spring appears to delight and interest, with all its attendant pleasures.

As each succeeding bird resumes its song, or as each delicate flower shows itself in Nature's own garden; as each butterfly merges into an animate being, and the winter sleepers come out from their cosy quarters, the rambler by the countryside has all his attention firmly riveted, and his time busily engaged; his notebook, field-glass, and camera are —or should be—his constant companions.

Then on through the spring, until summer trips in with its wealth of wild flowers and glorious avine music. He notices the absence or the increase in various species of birds; he finds a new species nesting within his own beloved parish, and is zealously engaged adding to his store of knowledge respecting the fauna or flora of the neighbourhood. The birds mostly cease their sweet cadences when parental cares and affections beset them; the Nature-lover then may affix his attentions upon the young broods, and anxiously watch for the safe deliverance of many a downy nestling. Nature's triumphal march proceeds; there is a temporary lull by the countryside until autumn steals along at all too quick a pace. With its advent the swifts depart, and shortly after them many another pleasing summer visitor speeds away to sunnier climes.

But even in autumn the wild flowers seem to gather fresh vitality, and bloom in even greater profusion than during the heat of summer. Then the Nature-lover watches for those autumn tints—the russets and golds, the silvers and greys, the purples, and other colourings so marvellously put upon Nature's canvas by the great painter Nature herself. The summer birds having departed, the last gentle martin having been gazed upon until another year, the rambler finds consolation in the sweet autumn song of the redbreast—almost the sole chorister at this season—and later the re-assumed carol of the ascending lark.

Once again he watches the leaves as they toy in the air like so many butterflies on the wing; again he scans the fields for the first sight of the redwing and the fieldfare—our winter visitors from Norway—and he settles down to study the more closely those creatures which a wealth of foliage has hidden when Nature wore her gorgeous summer tresses, and as each winter month passes by he longs again for the advent of another delightful springtime.

Taking it for granted, then, that you are ready and willing to learn something of Nature's secrets, and that you intend to cultivate and appreciate the useful habit of observation, what 'apparatus' do you require to fit you out for the study of field natural history? One thing is absolutely necessary, a notebook. Herein you will record the date on which you notice the first flower which raises its head in early spring; the date when you observed the swallow and other birds and heard the welcome call of 'Cuckoo;' the date when you first saw the various species of butterflies and moths upon the wing; the exact locality where you so eagerly observed some rare plant, bird, mammal, or insect; make notes about the weather, the direction of the wind, the progress of crops, and generally the sights and sounds to be seen and heard in the country throughout the whole year. No record is too trifling; you should duly chronicle the appearance above the earth's surface of the first blade of grass; the sweet carolling of the first skylarks in the blue ether overhead. Take your notebook out with you into the fields; bear in mind that a note made on the spot is worth a whole cartload of recollection.

Now, what other 'apparatus' do you require besides a notebook? Well, two more valuable acquisitions may be made, namely, a field-glass and a camera. If you are fond of insects and plants, discard a field-glass for a microscope; if you prefer studying the feathered tenants of our country, stick to a field-glass and let go the microscope. Save your pocket-money to purchase these valuable aids to your studies if the shoe pinches, for it is surprising how quickly the pennies make the pounds. And then, if you are handy with your tools—and most boys like carpentry—Mr. Sedgwick can tell you how to make your own camera for an outlay of a few shillings, and has also explained to you how to be successful in using it. If you are able to secure pictures like those which embellish this book, you will, I think, be satisfied. There is no reason, then, why you should not achieve equally satisfactory results, and even go one—or more—better. The field is open for all. Nature has no class distinction; there is no drawing the line. Nature is waiting, simply to be penetrated.

You find a plant in flower, and admire its beautiful colour or perchance its sweet scent. Do not be content with mere admiration; learn its name, and, having done this, find out something of its life and habits; how it is fertilized; what insects visit it for the precious honey secreted within; watch it as it goes to seed, and the season following trace it right away from its first appearance in the springtime until its disappearance in the autumn. Do not be content with identifying plants and trees and other forms of wild life, but know them. How? By observation. Study common things. These are too often regarded as dull, and oftentimes uncomely and unworthy of notice. The study of common objects of the countryside is as wonderful and educational as the rarer forms of wild life, and people who flock from the country to the towns because they have found nothing to interest and amuse them have failed to use their eyes and ears to advantage. They blame the country; it is not the fault of the country, but entirely of themselves. Lord Avebury has said, and said truly, that if people would only cultivate the habit of observation, every walk may become a scientific exhibition, every field a museum, every wood a fairy forest, and every stream an enchanted river. If you study Nature aright, you will, I can promise you, have your mind filled full of gratitude and wonder; you will find your mind soothed, your muscles strengthened, and realize to the full that knowledge is not only power, but pleasure too.

You will learn much that is interesting and useful in studying Nature; it will help to make you better and brighter boys, and in after-life you will, I can assure you from my own experience, look back with pleasure and pride upon the happy field rambles you experienced in your younger days. From Nature's ways you will learn lessons of patience, perseverance, care, intelligence, beauty, devotion, attachment, design.

Therefore, let me advise you to pursue this fascinating study without further delay. Go direct to Nature herself, and once you have commenced to learn something of the wild life of our country, your interest will be awakened, your efforts redoubled, your success will be sure, and you will, when you reach manhood, find it an unspeakable blessing that in your boyhood you sowed seeds of culture in the garden of the mind.

Above all things, I think you will find that this study of Nature will lead you to Nature's God. The more we learn about the minute laws and influences at work in Nature, the more certain we are of the Personality of Him who framed the world, and all that therein is.

The more we watch bird and beast and insect, the more we acknowledge that all the creatures, by their very living, praise their Maker.

And it is impossible to follow the lives and movements of these humbler creatures, without learning deep and lasting lessons of God's Mercy, His Providence, His Love, His Forethought. He does indeed mark the sparrow when it falls; He does indeed number the very hairs of our head. He hears the young ravens when they call upon Him. All the wild beasts upon the mountains are His, and the living things of the forest are all in His sight.

Nor do we only learn to look up to the great

Father, but in the book of Nature we learn lessons for our daily use—lessons of self-sacrifice and courage; lessons of truth and duty and patience; lessons of bearing one another's burdens, and so fulfilling the law of Christ.

Therefore, my dear children, whoever you may be who read this book, do not forget to be on the look out for these deepest lessons of all.

'All things bright and beautiful,
All creatures great and small,
All things wise and wonderful,
The good God made them all.

. . . . .

He gave us eyes to see them,
And lips that we might tell
How great is God Almighty,
Who hath made all things well.'

## CHAPTER II

# HOW TO MAKE A CAMERA FOR A FEW SHILLINGS

IT is generally supposed that very expensive apparatus is necessary to secure Nature-pictures; lenses that cost nearly their weight in gold, focal-plane shutters, reflex cameras, fitted with a host of ingenious tricks—these are the kind of things which, to the uninitiated, sound essential to the person who would portray Nature in her wild unconscious phases.

I don't deny the advantage of good lenses and specially built cameras, but this chapter, which is addressed primarily to boys, is to show that very much cheaper and simpler materials are at hand, and that it is possible to make a camera, completely fitted out for all the demands that may be made upon it, for a few shillings—to be exact, for fourteen shillings.

Nor will I pretend that there are not cameras more compact and better finished, although it is an undeniable fact that there is no camera in the market at present which will do the work of the one described in this chapter.

For this camera will take 'snap-shots,' portraits, landscapes, birds, beasts and animals, trees and plants; it will do telephoto work, and will also copy small objects the same size. It is made of such material that it may be left out all night and subjected to the roughest handling without damage, whilst, if it should get broken, it may be repaired at the cost of a few pence.

The illustrations (Figs. 3 and 4) will give a good general idea of it.

Let me, for the rest of this chapter, address myself to my youthful readers, with one proviso only, viz. that I may take it for granted that they know something about sensitive plates and sharp focus, and development and printing. It is, otherwise, impossible in a book of this nature to deal with the whole practice of photography.

We begin by taking it for granted that every boy who has any spirit values what he has made himself above anything that he may buy or have given him. Those model engines, for instance, and railway lines that we see in the shops, will not compare with the engine we made and the railway track we have laid down in the garden. I had rather have my home-made schooner, though it may be a bit rough, than the best highly polished model that ever came out of a model boat-yard. Why?

Because every inch of its hull, every spar and sail and flag, have come out of my own mind, made by my own hands.

I take it, then, that when you have made your own camera on the lines I am going to lay down, and have taken it out for your first shot in the country, you will be prouder of it, and you will do more with it, than you would with a more expensive bought article.

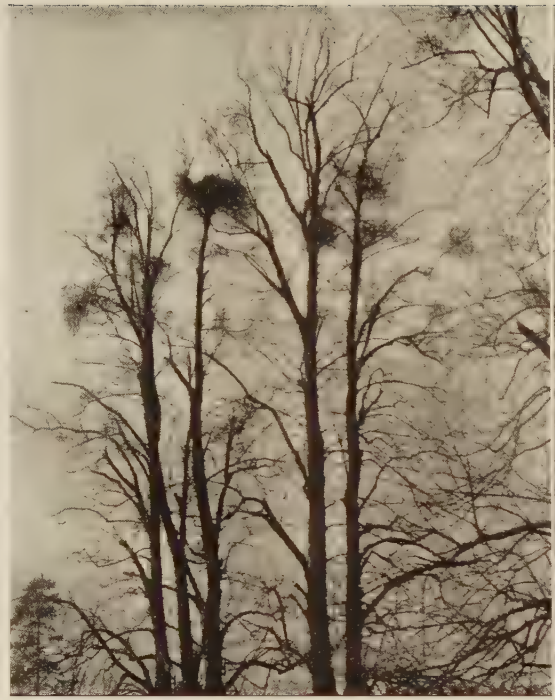
When you come to Chapter III., dealing with methods of photography, you will find, in addition, all kinds of chances of exercising your ingenuity in the way of disguises and tricks and methods of deceiving or circumventing the shy creatures whose pictures you want to record. In fact, I think there is no hobby which gives such play and scope to a boy's love of adventure and enterprise, teaching him the true pleasures of the chase, the joy of the woodlands and commons, the excitement of innocent hunting and stalking.

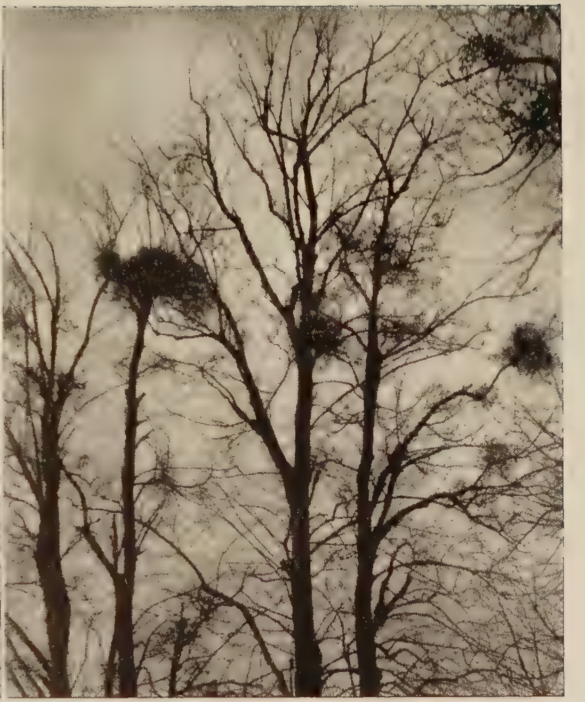
I put down first of all the rough cost of the materials.

| | |
|---|---|
| One ½ plate rectilinear lens | 6*s.* |
| One double plate holder, ¼ plate size | 1*s.*, 2*s.* 3*d.*, or 2*s.* 6*d.* |
| One shutter, preferably Horne's | 4*s.* 6*d.* |
| Two spectacle lenses, one positive, the other negative | 1*s.* |
| Wood, etc., for camera body | 1*s.* 6*d.* |
| Lowest total | 14*s.* |

**The Lens.**—It may sound impossible to get a good lens for 6*s*., but that is the actual price of the one I used. It is a half-plate rectilinear of about $8\frac{1}{2}$ inches focus, with an iris diaphragm, working at (reputed) f.8. It is made by Messrs. A. E. Staley and Co., Holborn Circus, and is entirely satisfactory. The ordinary dealer does not stock so cheap a lens, but it may be obtained direct from the London House. I chose a half-plate lens for two reasons, although the camera is only a quarter-plate size: first, because in photographing small birds and animals, it is essential to get them some size upon the plate without getting too near to them; and second, because I wanted a lens that would cover sharply to the edge of the plate, without stopping down. This lens will not, of course, cover a half-plate sharply, but it is all that you will want on a quarter-plate. In bright weather, the lens should be stopped down to f.11, or even, in bright sunshine, to f.16, and instantaneous exposures will be quite possible with it under these conditions. (Of course, rapid plates must be used.) Many of the pictures which you will wish to take will not require instantaneous exposures, in which case the lens should always be stopped down to secure perfect definition.

(It may be that there are other makers of similar lenses, but as it is not the rule to be able to get such cheap ones easily, I venture to name





MISTLETOE ON LIME TREES.

FIG. 5.—PHOTOGRAPHED WITH ORDINARY LENS.

FIG. 6.—WITH SPECTACLE LENS.

[*see page* 19.

the very courteous firm from whom mine was obtained.)

Good work may also be done with a cheap landscape lens; and one of half-plate size, in a sliding mount worked with rack-and-pinion, may be bought for about the same price. But, though the sliding mount is of great use for focussing, the lens cannot be used with a large aperture, and is of little use, except on very bright days, for instantaneous photography.

It is quite possible, too, that a good lens may be picked up second-hand.

**The Shutter.**—There are many different shutters on the market, but the one I have named, which is seen in the illustrations (Figs. 3 and 4), is, I think, the best of all the cheap ones. I have done good work with a small shilling up-and-down shutter, but it is rather too noisy. A flap-shutter, to work, as mine does, behind the lens, is the best for all-round work. Such a one could be made by a boy with a little ingenuity to work with elastic bands or a small spring. I remember seeing a simple form of such a shutter on the 'Demon' cameras of long ago. But the Horne shutter works with a pneumatic ball and tube, and so can be operated from a distance. It can be held open as long as you like, or it can be made to act at about one-thirtieth of a second, which is quite fast enough for all ordinary work. It can be made to shut almost noiselessly, by the addition of a little rim of velvet for the flap to close on, and the fact that it is to be fitted inside the wooden body decreases the noise to an almost inappreciable amount. When you can afford it, you may like to buy a Thornton-Pickard, or some other form of shutter which will give you faster exposures; but in any case the silent flap-shutter should be retained; for very often—with animals especially—the noise that a roller-blind shutter makes startles them, and they move enough to spoil the picture. The hedgehog, for instance, Fig. 13, made every quill jump when I used a roller shutter upon him, whilst the flap-shutter, unheard by him, recorded his image faithfully.

**The Dark Slide.**—Speaking only of cheap slides, there are three on the market which are available: (1) a shilling cardboard shutter, made by Horne; (2) Edward's metal shutter, price 2*s*. 3*d*.; and (3) Griffith's well-known metal and cardboard shutter at 2*s*. 6*d*. These are not interchangeable, and you must make up your mind which you will have, as the fitting and interior measurements of the camera depend upon its size. The one in the illustration is a Griffith's.

**The Spectacle Lenses.**—Few people know the advantage of having one or two such lenses for auxiliary work, but they may be of the greatest use. Go to some jeweller's shop, and ask for permission to try one or two lenses in front or behind your rectilinear lens until you get one to fit. The lenses I use for the camera with the measurements given below are of the lowest power but one.

Both these lenses should be mounted in the lid of a pill-box (one is shown in Fig. 3), so that they may be placed in front or behind on your camera lens.

The first of these two *shortens* the focus of your lens, and enables you to get much nearer to an object, and even to copy it life-size. The magpie-moth, in Fig. 58, was taken in this way. The second lens added to the camera-lens acts like a telephoto lens, and enables you to take objects on a larger scale some distance away. The mistletoe growing on a tree, in Figs. 5 and 6, was taken, the first with the ordinary lens, and the second with the negative lens added.

In using these supplementary lenses, it is well to remember that the telephoto lens demands a longer exposure, and the magnifying lens a shorter exposure, theoretically. Practically, however, it is best to stop down the rectilinear lens to f.16, and give a time exposure in both cases.

These two lenses give two different results each, according to their position before or behind the main lens. (In placing behind the lens, room must be left between the lens flange and the shutter for the spectacle lens to be slipped into place. See below.)

Now, with regard to the body of the camera. The illustrations show that it consists of a box. It is, in fact, a Hudson's dry soap box, narrowed down a little to carry the dark slide comfortably within. My box is 15 inches long, by 5¼ by 6, outside measurements. It looks, it is true, like a small coffin, but it is not too heavy for any one to carry.

The lens is let into a board, placed just over 2¾ inches from the end, measuring with the front door closed.

The front door is not let into the box, but hinges on in front, so that it can open completely out of the way. It might be quite possible to do without this door, and screw the lens immediately on to the end of the box. But the advantage of the door is: (1) that it conceals the lens from the creature to be photographed (and almost all animals are likely to be startled by the sudden sight of a great glass eye staring at them); (2) it protects the lens on occasions when perhaps pictures have to be taken in rain, or in the spray of a sea-beach, or, when the whole camera has to be left all night set up in front of some animal's haunt.

The shutter is screwed on to the back of the lens board, and a hole is made in the latter, through

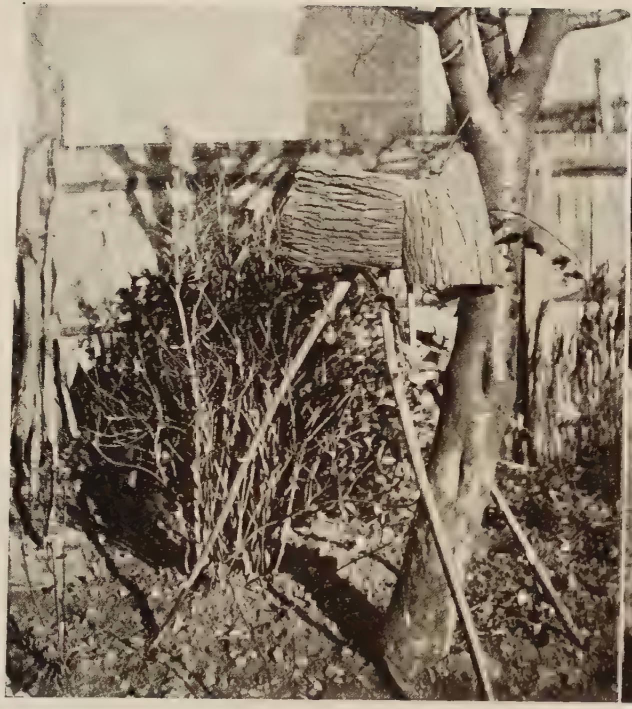


FIG. 7.—THE CAMERA DISGUISED IN BARK.

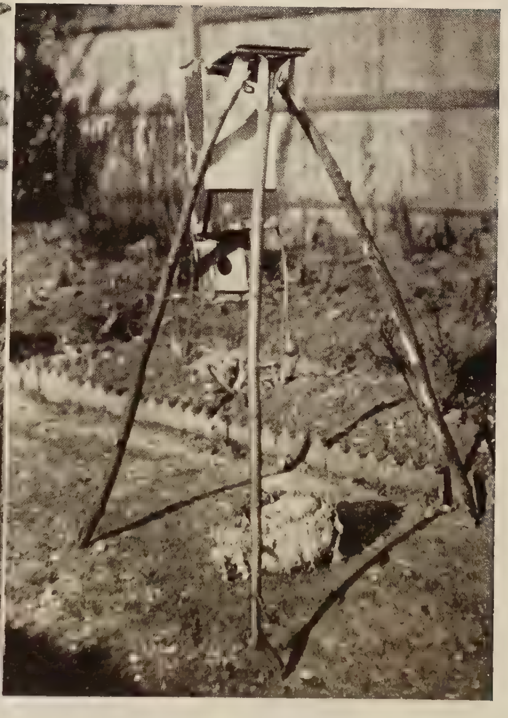


FIG. 8.—CAMERA AND STAND, ALSO SHOWING BOARD FOR VERTICAL PHOTOGRAPHS.

which the indiarubber tube is passed. Between the shutter and the board a horseshoe piece of cardboard should be placed, so that the negative lens, mentioned above, may be slid down and held in position for long-distance views. When the extra lens is not being used, the open part of the horseshoe must be covered with a slip of card, to prevent light entering the camera through the crack which would otherwise be left.

The top of the box, to the length of 11¼ inches, is nailed or screwed down, the rest of the box being left open.

Immediately where the top ends, four pieces of wood in shape of a frame, having a hole in the centre 4¼ by 3¼ inches, are screwed into place, and the rest of the box is filled up with loose wooden frames, varying in thickness from ⅛ to 1 inch. All these frames are covered with velvet, so that, when placed close together, they make a solid block, with no light coming in between them.

One frame (lying on the table in front of the camera in the picture) is ¼ inch thick, and bears a piece of ground glass glued to one side (the ground side to the wood). This is the focussing screen, and is in register with a Griffith's slide.

When the dark slide is placed next to the fixed frame, with all the others behind it, the camera may be used for snap-shots. Everything is in focus 'at infinity' point.

Of course this first measurement of 11¼ inches will vary according to the focal length of the lens used. And it is best to find by experiment, after fixing the lens in its place, where the first frame must be put. It can be found in the following way. Before putting the top on, make your frame, and, placing the focussing screen *behind* it, take the camera to your window, and with a large cloth over you and the camera, shift the frame and glass backwards and forwards in the box, until you see the image of distant trees or houses quite sharp and distinct upon it. When you have placed the glass where the image is most distinct, mark the spot with a pencil, and screw your frame on there. Then you will always be sure that all distant objects are sharp, and the camera will be like the ordinary 'snap-shot' machine.

The other frames are used when objects nearer at hand are to be photographed, or when the supplementary lenses are in use.

For example, for objects 20 feet away, I find I need the frame ½ inch wide between the ground glass and the fixed frame. For objects 10 feet away, I need two frames inserted. When the focussing glass is at the very end of the camera, I find I can photograph objects 4 feet away.

With the aid, then, of these loose frames of various thicknesses, I can focus any object between 4 feet and (say) 50 feet away.

By placing them in one particular order, I can even make a rough focussing scale to suit, and so do snap-shot work without focussing directly on the screen. Any further focussing that is necessary is done by unscrewing the lens (which has a ¼-inch play) partly out of the lens-flange.

With the aid of my magnifying lens, and the ground glass furthest away, I can focus objects only a few inches from the camera; and with the aid of the telephoto lens, and the glass in the same position, I find that distant objects are in focus, and are considerably larger.

The back end of the camera has a round or square hole cut in it, by which to view the image on the ground glass.

The next thing to do is to cover the inside of the camera with dull black paper—the outer covers of roll-films are just the thing; and then comes the adornment of the outside.

There are many ways of doing this. Perhaps some stout American cloth is the best thing, as this is waterproof. If you choose this, do not choose black, which is horribly conspicuous. A tan or green is infinitely preferable, as these colours harmonize much more with the colours in Nature.

Or you can paint the camera outside to imitate a tree trunk; or better still cover it with canvas, and paint it with the invisible coloration which Dame Nature herself teaches. If you would find out what this is, go to the South Kensington Museum and see the colours on the birds and beasts in the cases there. The secret is this:—The upper part should be dark, the sides should shade away to white underneath. Get a cork, first of all, and paint that in this way, then go and fix it up on a wall or a tree, and note how it sinks into invisibility as you step away from it. I do not say, of course, that your big camera will thus become invisible to the creatures you photograph, but at any rate it will not be half so alarming to them, because it will be in Nature's colours.

**The Stand.**—It will be necessary for you to have some sort of a stand. The great point is to have a firm one. And it should have a good large top, capable of carrying the camera without overbalancing. The latter can be fixed to it in various ways, the best, of course, being that of a screw and bush. If you purchase these (at a cost of 8*d*. extra) screw the bush into the side of your camera firmly.

Do not let it have staring white or red legs, but paint them some dullish colour.

You may often have to photograph objects directly on the ground, and to do this you need an extra board hinged on to the top of your stand, as in the illustration. This can be moved at any angle towards the ground.

A simple and effective stand may be made for a

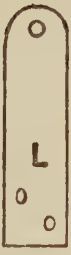


FIG. A.

few pence in the following way. Obtain three long sticks, with the bark upon them, say about 48 to 54 inches long. These are to form the legs. They may for easy carrying be cut in two, and a metal ferule fixed to one half, making each leg like the two joints of a fishing-rod. Procure six pieces of brass, or any similar metal, shaped like Fig. A, and fix two opposite each other on the top of each leg. The end A must project at least 2 inches beyond the wood. Next get a piece of board to form the camera-top, and hinge upon it the second piece, for use when the camera is to be used for photographing anything on the ground. Procure at an ironmonger's six 'shouldered square hooks,' or 'dresser hooks,' and screw them into the bottom of your board (Fig. C). Screw them sufficiently far apart for the brass peg plates to stretch with some difficulty. Insert the pairs of screws AA, BB, CC, (Fig. B), into each leg respectively, and your stand is complete. Such a home-made stand, very roughly made, is seen in Figs. 7 and 8.

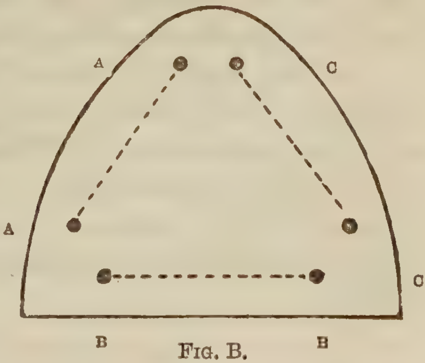


FIG. B.

**The Finder.**—Although you will not need a finder often, it may be well to have one. A cheap one can be bought for sixpence, but a most effective one can be made out of a long tube of cardboard or metal, which may be fixed lengthwise on the side of the camera, along the centre line. The object you see through this tube will always be exactly on the middle of the plate.

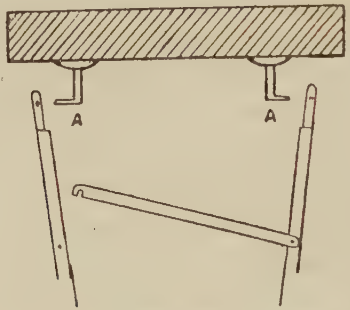


Fig. C.

There are several plates and printing papers in the market, but I would specially direct attention to the very excellent and well-known Ilford plates and papers, manufactured by Messrs. Ilford, Limited, Ilford, Essex. I have used these extensively, and have invariably found them most reliable.

## CHAPTER III

# HOW TO SUCCEED IN NATURE-PHOTOGRAPHY

THERE are only two accessories of any importance in the road that leads to successful Nature-photography. They are *patience* and *absolute quiet.* Although there are few photographs in this book which took very long—for the plan of the book is to show some of the commoner and tamer creatures within reach of all—yet, if even these pictures are to be secured by the boy-naturalist, he has first to learn to hold a severe check on himself, to move quietly, to be keenly observant, and to be content sometimes to wait a long time for his sitter to grow at ease. When observing beasts and birds, do not wave your naked hands about, and do not move your head violently. Such motions remind the creatures at once that you are a human being, and therefore to be avoided. Do not wear staring clothes. The quieter they are, the better. If they are green with age, better still. Most birds will remain on their nests undisturbed, if only you approach them quietly and naturally. Most birds will return to their nests if you go a little way off and sit down motionless. Do not hunt for nests or animals as if you were a Sioux Indian, crouching for concealment in the pampas grass. Do it in as easy and natural a way as possible.

In addition to these general rules, it may be necessary for you to adopt from time to time some method of concealment, both for yourself and the camera. It is not so necessary for the latter sometimes as for yourself. For if you leave the camera standing in position, for instance by a bird's nest, or a place where birds perch or bathe, they will soon grow accustomed to it. Here the particular camera described in the last chapter has a positive advantage. For you can easily knock up another box exactly like it, and leave that in position, going the next day and substituting the real camera for it.

A most effective disguise for the camera is a hollow frame of bark or virgin cork, with, maybe, a spray of ivy attached to it. When photographing in a wood or coppice, you will find it a most valuable disguise.

Again, I find that a coloured focussing cloth is useful. Mine is a very shabby green on one side, on which I have sewn a few sprays—now much the worse for wear—of imitation leaves. If you have

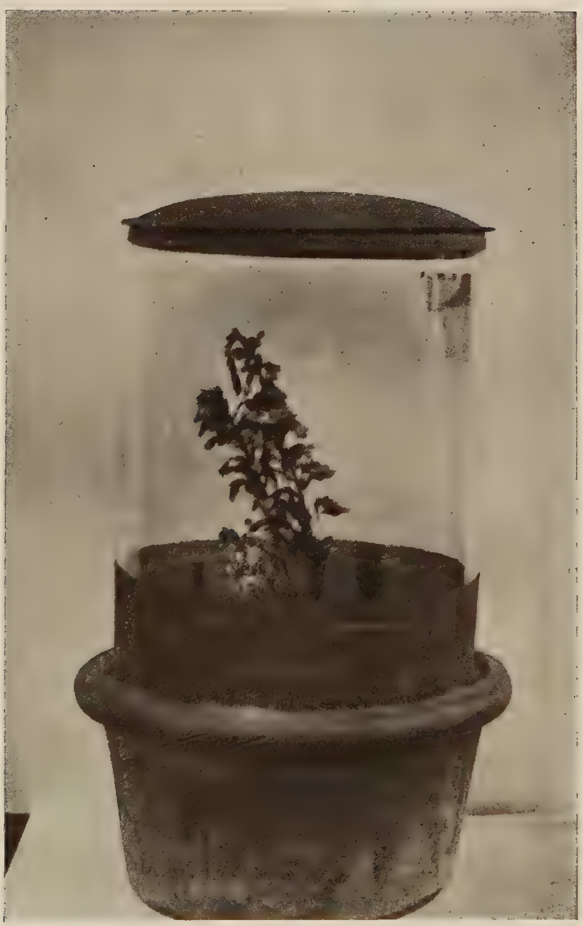


FIG. 9.—BREEDING CAGE FOR BUTTERFLIES.

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a mother or elder sisters, you should have little difficulty in getting these. When photographing with the camera on the ground, I cover it with the cloth, green side up, and arrange some grass about it as naturally as I can, and in most cases the commoner birds pay no attention to it.

The other side of the cloth is a dirty gravelly colour, blotched and spotted, which harmonizes more or less with a ploughed field or a road, and this also can be used effectively.

When on a stand, the simplest plan is to conceal the whole camera with leaves and branches, to twine creepers round the legs, and to leave it in that position for a little while. I have seen birds perch on mine when in this position.

As for disguises for yourself, this is where you will find scope for your own fertility of invention, and will discover the delight of pitting yourself against wild Nature, and succeeding. I have one, a kind of long sleeveless cassock, with a hood which draws right over the face. It is painted to imitate a bundle of branches and brushwood on one side, and the other carries a colour supposed to harmonize, like my focussing cloth, with the earth. Apparently, however, its chief value lies in the fact that, when one is lying down, one presents the appearance of a nondescript heap of rubbish.

But, to tell the truth, I have used it seldom, because, in photographing the commoner birds and beasts, I have found it quite sufficient to lie still, a little distance away from them, with the ball of the shutter on a long tube in my hand. Occasionally, I have got a man to cover me with hay or straw, or have cut a few branches from the hedge and lain down under them. And I have found that it is one's face and hands that need hiding most, and a green muslin net with leaves and twigs sewn on it is useful for the former. But I repeat, disguises are not the essential thing. Quiet and patience come first.

Many of the pictures taken in this book needed no such disguise. The whole business consisted in *finding* the objects, and in some cases taking them home to watch and examine. It is in this pursuit that we all learn to use our powers of observation, and come to acknowledge what a wealth of interest there is about us at every step. Even my little strip of garden, given over almost entirely to the children, yields a whole world of living creatures whose ways I can watch.

The ants, the earwigs, the snails, the spiders, the common moths and butterflies, the tame frogs, the ancient tortoise, the dandelions and weeds, the birds on my one tree, provide me with ever new fields for discovery and investigation. In fact, I should advise most strongly that the first few pictures you take with the camera be taken in your own garden. Go and see what you can find there.

You will get many pictures of the birds by feeding them regularly every day. Do not do this only during the winter months, but keep it up all the year round. Blackbirds and thrushes, chaffinches, robins, tits, starlings and sparrows, will come readily to your food-trays, and will bathe in the bath you provide for them on the lawn. If you live in a big town, you can still attract these birds in almost any suburb, whilst in the country you may see many more. Put up boxes on your walls or on the trees for the birds to nest in. See that they are fixtures, for if they are at all shaky the birds will not venture into them. Have a perch or two outside your window with some food close at hand. The robin is sure to set the example to the other birds of coming there for food.

Two special pieces of apparatus I may mention in conclusion. Perhaps the best way of observing the caterpillars and butterflies is by breeding them. Fig. 9 is a picture of a breeding-cage for butterflies.

It consist of an earthenware pot, in the centre of which is a little zinc bottle for holding water, in which the food-plant of the caterpillars is placed. The rest of the pot is filled with earth. Round the rim of this pot there is a ring of finely perforated zinc, intended to give air, and yet to keep out the ichneumon fly which destroys so many caterpillars. Resting on a ledge inside the zinc ring is a glass barrel, which in its turn is covered by a cover of perforated zinc.

Any elementary book will tell you how to keep those insects successfully, and you will then be able to trace the growth of a butterfly from the egg to the perfect insect, and photograph it at all stages. Finally, you can, and I hope you will, let the perfect insect go, having protected it from its enemies during its early growth.

Meanwhile, you can attract moths by sugaring the trees at night, and then start out to photograph the stragglers in the morning. But observation will help you most here. You may find the corner of the river where the purple emperors breed, and find their caterpillars on the sallows; or you may come across the chrysalis of the orange-tip on the hedge-parsley; you may note the wayside pond, where the dragon-flies skim backwards and forwards, and may be able to see what reed or rush or flower they prefer to settle upon. Once more, often early in the morning, or after a heavy shower, you will find insects asleep or sheltering, and will be able to get a picture of them without much trouble.

Whenever you are able, always try to get a neat background to your pictures. A roll of brown paper with a white sheet pasted on one side may be a useful accessory to many of your studies, for it may be set up behind the flower or insect you

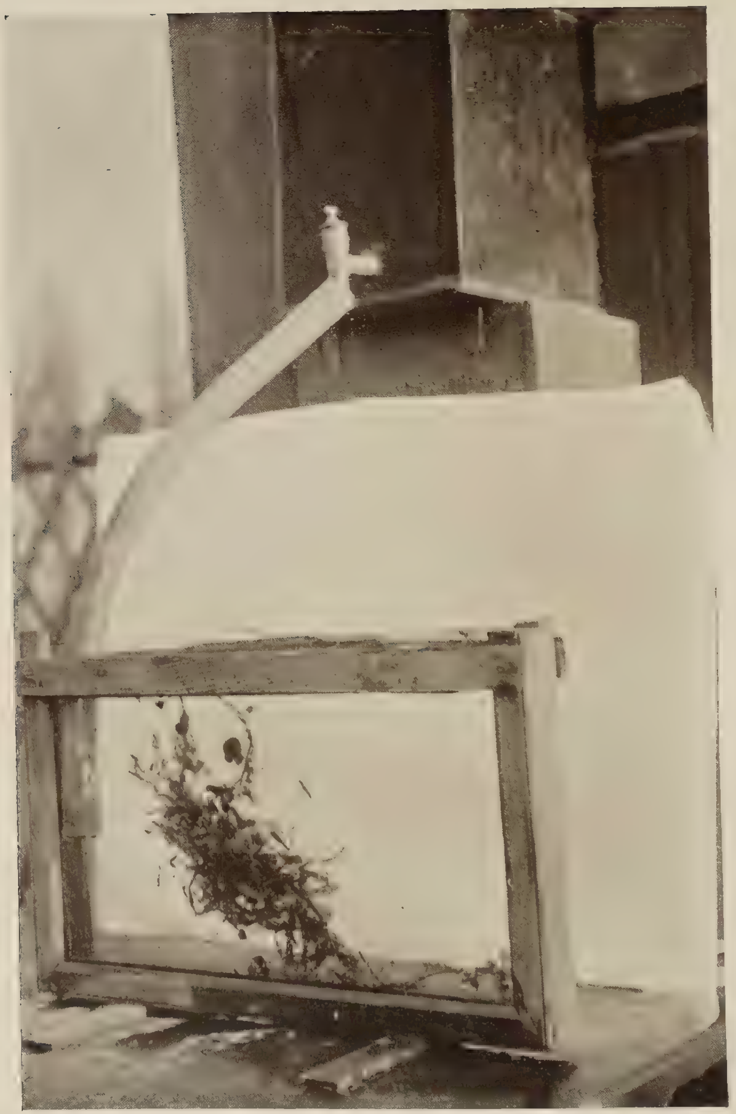

FIG. 10.—APPARATUS FOR PHOTOGRAPHING FISH AND WATER INSECTS.

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are focussing, and so give you a much less distracting result.

The second piece of apparatus is the small aquarium for photographing fishes and water insects. I made it from an old picture-frame cut in half, glued together, and two pieces of glass fixed in, as the picture shows. The piece of glass facing the camera should be higher than the one behind, so that the water in running over passes away behind, and does not flood the piece in front. Two cross pieces of wood are fixed to the bottom to make the frame stand firmly, and a tube leads fresh water into it from a small tank above.

These water-pictures need a background, which may be quite plain, or may be painted to represent water weeds. Although the illustration given in Fig. 10 shows the shadows of the fish on the white background behind, and gives a pretty effect, it is best, on the whole, to have the background sufficiently far back to prevent any shadows being thrown upon it.

When the fish or the water insects are placed within, they should be left for a little while—out of direct sunlight—to get accustomed to their rather narrow quarters. As far as possible avoid exposing them to the direct rays of the sun, and keep them no longer in the aquarium than is actually necessary. They will, however, live comfortably in it, so long as fresh water is entering from the tank above.

Some of the pictures in this book are larger than $\frac{1}{4}$-plate in size. I may explain that many of them were taken upon 'Cristoid films,' which have the delightful property of growing whilst being developed; others were afterwards enlarged.

Finally, before giving place to Mr. Westell, I repeat that patience and quiet are the most valuable adjuncts required for Nature-photography. I need scarcely add that gentleness towards God's creatures is to be expected from all sincere Nature-lovers.

Now, with your weapons under your arm, you may go out on your harmless quests, among birds and beasts and flowers, like Mowgli into his jungles, and to you I wish, as the creatures he loved wished one to another—'Good hunting!'

## CHAPTER IV

# SOME BRITISH MAMMALS

BEFORE dealing with some of the chief features in connection with a few of our commonest British mammals, it is important that the reader should understand what a mammal and a vertebrate are.

Mammals are divided into six orders, as under—

1. **Mammalia.**
    - I. Bats (order *Chiroptera*).
    - II. Hedgehog, mole, and shrews (order *Insectivora*).
    - III. Wild cat, fox, pine marten, polecat, stoat, weasel, badger, otter, seals (order *Carnivora*).
    - IV. Squirrel, dormouse, rats, mice and voles, hares and rabbits (order *Rodentia*).
    - V. Deer (order *Ungulata*).
    - VI. Whales and porpoises (order *Cetacea*).

To pursue the subject further, it would be as well perhaps to complete the list of vertebrates, of which the mammalia form the highest class.

Following then after the mammal class we come to—

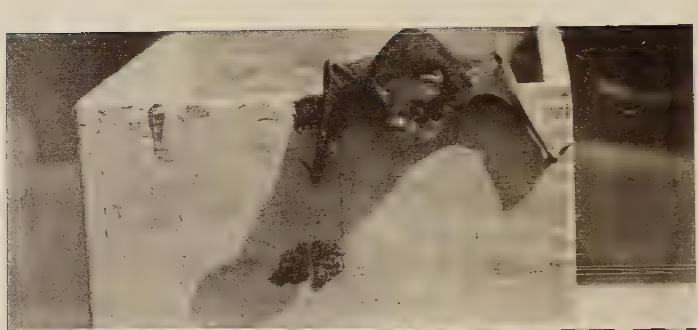
2. *Aves* (Birds).
3. *Reptilia* (Reptiles).
    - I. Lizards.
    - II. Snakes.
4. Amphibians.
    - I. Frogs and toads.
    - II. Newts.
5. *Pisces* (Fishes).

The lowest vertebrates are the lampreys and hag fishes.

Now all the above animals, starting with the bats and ending with the fish, have backbones; this, to describe the matter simply, constitutes a vertebrate. Any animal which has a vertebral column, or backbone, is a vertebrate; so that the reader, having this knowledge before him, will in future know not only what constitutes a vertebrate, but what animals belong to the vertebrata.

As will be seen from the lists already set out, the mammals are at the head of the vertebrates, and a mammal is an animal which suckles its young, the female possessing *mammæ* (teats).

It will doubtless surprise a great many boys—and adults too, for that matter—to notice from the above list of mammals that whales and porpoises have a place accorded them there, and not amongst the *pisces* (fishes) Now whales and porpoises are



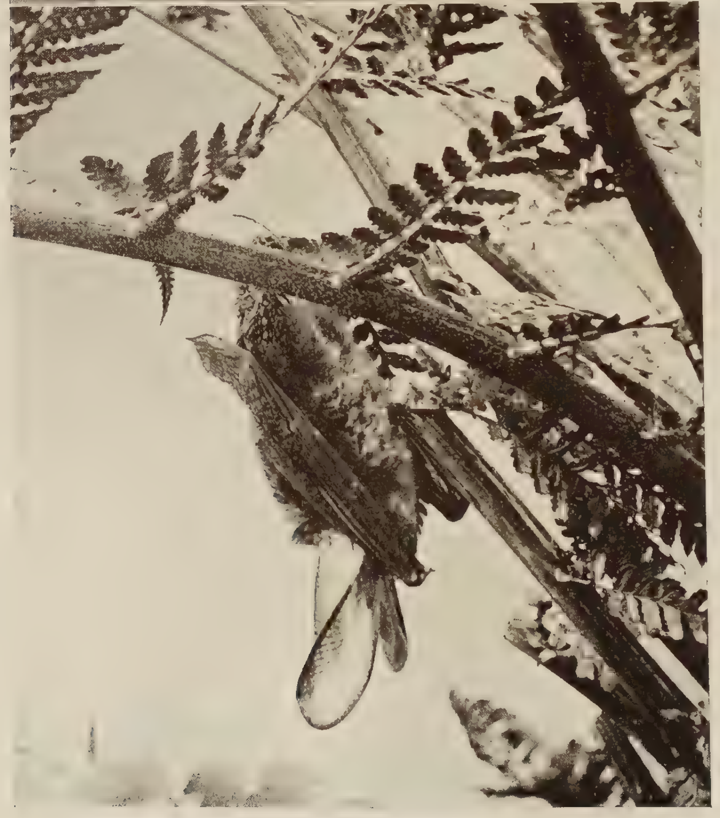


FIG. 11.—PIPISTRELLE BAT ABOUT TO TAKE FLIGHT.

FIG. 12.—LONG-EARED BAT ON BRACKEN.

[*see page* 40.

not fish at all; they are mammals, although not four-footed, like most of the other animals included. Their young are brought forth alive, and are suckled in the same manner as kittens or puppies are by their mothers.

The four-footed mammals are called quadrupeds. They have red, warm blood, and so have birds, as also have the whales, etc., differing from reptiles, amphibians and fishes in this respect. It is somewhat confusing, however, to call the four-footed mammals alone quadrupeds, as some reptiles, such as lizards; and amphibians, such as frogs and newts—have also four feet. Note also that although the whales and porpoises are not four-footed, yet they are akin to the quadrupeds, because they have red, warm blood, and suckle their young. I hope now that you are able to answer in simple and understandable English the following questions:—

What is a vertebrate?

What is a mammal?

In the British Isles we have few mammals, and fewer reptiles. New Zealand, and perhaps the Polar regions, are the only lands of considerable size which have a poorer list of four-footed inhabitants. There are about seventy species of mammals upon the British list; and to deal with a few of the commonest kinds in the order in which they appear in the list at the commencement of this chapter, brings us to those weird winged mammals, the bats, which all boys who live in the country have noticed hawking in the air after insects, 'when twilight shadows fall.'

## BRITISH BATS

All the bats found in the British Isles are insectivorous, or insect-eaters—indeed, throughout the temperate regions all bats feed on insects, whilst bats which are found in tropical countries live chiefly on fruit. In those temperate countries where there are, comparatively speaking, no winged insects, there are no bats.

Bats have very keen senses—of touch and smell, to mention two only—and possess great powers upon the wing. When their eyes have been covered over, they have been known to fly clear of threads suspended in a darkened room! They resemble the swallow, martin, swift, nightjar, and other birds, in that they are seen to best advantage on the wing, the nature of the food necessitating its capture in the air. They are ungainly and awkward in their movements when upon the ground, yet most bats can swim. They do not, however, take to water readily, and experience difficulty in leaving it.

Bats are attacked by small ticks, or parasites, and are also preyed upon by stoats and owls. It is interesting to notice, too, that dogs evince much dislike to picking up a bat, the reason for which has been stated to be the distasteful scent. During the winter they hibernate, sometimes one being found alone, but generally numbers are found together, each sex keeping to itself. They retreat to hollow trees, caves, church towers, ruins, and other places, and generally hang head downwards, as will be seen from the photograph of the long-eared bat on bracken-fern (Fig. 12). Stray bats may be observed out and about during winter, and also in the daytime during the summer. The different species vary in breeding; as a rule only one young bat is born, at most two, in the early days of summer. The young one is wrapped by the female in a fold of her membrane.

**The Pipistrelle Bat.**—There are about fourteen species of bats, and amongst the commonest may be mentioned the pipistrelle.

This species is quite the commonest British bat, and is the one most seen, as its hibernating period is restricted to about three months of the year. It has a naked face, excepting for a tuft of black hair over the eye. At the surface the fur is reddish, much darker, almost black, at the roots. The ears have conspicuous lobes, and are notched on the margin. There are large glands over the mouth, and the membrane begins below the ankle.

Mr. Sedgwick writes:—

'It is a mistake to suppose that bats only fly by night. I have known a bat leave the shelter of my roof for a flight or two in the middle of the day. On one occasion, when some men were working at the end of a roof, no less than thirty bats crawled past them—although they were not necessarily disturbed by the men, their quarters being at the other end of the roof, the light alone must have attracted them—and flew off into the sunlight. The bat in the illustration (Fig. 11) did not seem to object at all to the brilliant sunlight in which he was photographed. He was found in the wooden box sleeping peacefully, in a lumber-room, and on being brought out to the open air, speedily woke up, and clambered out of the box with great speed, diving off its edge into the air as soon as his picture was taken.

'It requires a trained ear to catch his high-pitched note, which resembles nothing so much as a fairy slate pencil drawn on a fairy slate.'

**Natterer's Bat** has a wide distribution in our country, and is the most hairy of all the species we possess. The fur is reddish-grey and white, and is long and soft. The membrane includes the ankle, which, it will be noticed, differs from the pipistrelle in this respect. The ears are very long and pointed.

Of the remaining British species, mention need only be made of—

**Daubenton's Bat.**—Sometimes seen hawking over water. Two prominent swellings on face. Ears nearly as long as head, oval in shape, lobed and notched on outer margin.

**Whiskered Bat.**—Small, solitary, swift-flying. Met with in Hampshire and surrounding counties. Rare in the north. Has a thickly-furred face, hence the English name. Membrane starts from the base of the foot. Has a long, curved tail.

**Long-Eared Bat.**—One of our commonest species. Distinguished by great length of ears and tail, the former being nearly as long as the body, and flexible and semi-transparent. The voice is shrill and high-pitched.

**Barbastelle Bat.**—Restricted almost to the south-eastern counties; scarcer northward. A peculiar-looking species, described as 'grotesque in the extreme, the effect being heightened by the tufts of black bristles on the cheeks.' Face and ears black. Hibernates for a long period.

The only two remaining bats to which attention need be drawn, are the greater and lesser horseshoe species.

**The Greater** is fairly numerous in some southern counties, and it resorts mostly to forests. Feeds largely on chafers. Ears pointed; short tail. The front of nose-leaf is in the form of a horseshoe.

**The Lesser Horseshoe** was long thought to be a variety of the greater species, but is distinct.

It is, as its name indicates, smaller in size; does not resort to forests so much as the last mentioned, possesses a stronger flight; is restricted to the southern counties, but, unlike the greater horseshoe bat, is found in Ireland.

We now reach the mammals included in the order *Insectivora*, and among them two of the most common are the hedgehog and the mole.

## THE HEDGEHOG

Most boys have seen a hedgehog at some time or other, and maybe the reader has found one in the country, and carried home his prize in a pocket-handkerchief. It would not have been wise to carry it home in the hand, as its coat of spines does not allow any one to do this with any degree of comfort! And that same boy, on visiting his garden the next day, has been surprised perchance to find that his pet had vanished! This, however, is no uncommon occurrence, indeed the rule rather than the exception. Even if the garden is securely enclosed with a high wall, the wary hedgehog often manages to make good his escape. I managed to keep one in my own garden for a few days, but he found out a means of escape one fine day, and left me to mourn his loss. I called him 'Moses,' and in a day or two he became extremely tame, although only just taken from the wild greenwood. He would lap up milk out of a saucer whilst I held it in my hand, but on a stranger appearing he either curled up in a ball or ran as hard as he could to the other end of the garden. I would not have believed that this animal could travel so quickly, had I not witnessed its feats in this respect. It will, strange to say, visit particular gardens of its own accord, and make quite a lengthy stay there!

The hedgehog is a most interesting animal, but is rarely seen by the ordinary rambler along the countryside. It keeps to the woods and hedges for the most part, where it finds seclusion, and during the winter stows itself away at the foot of a tree or similar situation, making a snug dwelling of dead leaves. Strange to relate, it pairs for life, and five or six young ones are born in August. The nest consists of dead leaves. The young are born blind, the spines are soft and white, but soon change colour and become harder. Its food consists of worms and insects, but it will also take the eggs of game birds, and has been known to attack poultry. It is supposed to be a vegetarian feeder, but this is not so. It attacks adders, for the purpose of killing, and then eating them. This it does in a wonderful way, and a thrilling account of a fight between a hedgehog and a viper is told in Mr. J. G. Millais's great work dealing with *The Mammals of Great Britain and Ireland.*

Mr. Millais writes :—

'Every one knows that the hedgehog is a sworn enemy of reptiles in general and of the viper in particular; but few, perhaps, are aware in what way he contrives to overcome so recalcitrant and dangerous an enemy and make a meal of it. My keeper was going his round—Ferdinand Coste tells the story—this summer in a wood which is unfortunately infested with vipers, when he espied an enormous one asleep in the sun. He was on the point of killing it with a charge of shot, when he perceived a hedgehog coming cautiously over the moss and noiselessly approaching the reptile. He then witnessed a curious sight. As soon as the hedgehog was within reach of his prey, he seized it by the tail with his teeth, and as quick as thought rolled himself into a ball. The viper, awakened by the pain, at once turned, and, perceiving his enemy, made a terrific dart at him. The hedgehog did not wince. The viper, infuriated, extends itself, hisses and twists with fearful contortions. In five minutes it is covered with blood, its mouth one large wound, and it lies exhausted on the ground. A few more starts, then a last convulsive agony, and it expires. When the hedgehog perceived that it was quite dead he let go his hold, and quietly unrolled himself. He was just about

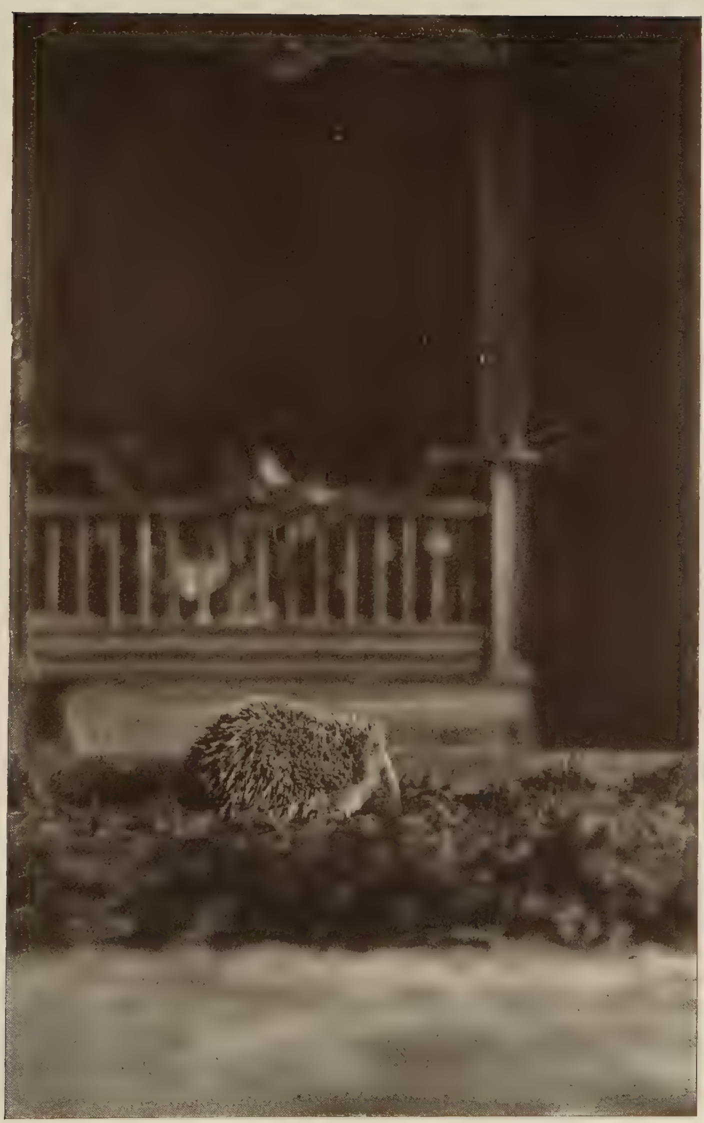


FIG. 13.—HEDGEHOG, COMMONLY KNOWN ALSO AS THE HEDGE-PIG BECAUSE OF ITS PIG-LIKE FACE.

[*see page* 42.

to begin his meal and devour the reptile when the sight of my keeper, who had approached during the struggle, alarmed him, and he rolled himself up again until the man had retreated into the wood.'

This incident clearly illustrates the wonderful means to an end adopted by the hedgehog to overcome one of its sworn enemies, as also the manner in which some of its food is obtained, and the uses to which it puts its needle-like covering!

The general appearance and size of the hedgehog are well known, as also the colour, but perfectly white examples have been found. The face is pig-like, the ears and neck are short, as also the legs; there are five toes on the feet, each having a strong curved claw.

['The illustration does not depict the "hedge-pig" in his usual surroundings, and thereto hangs a tale. When I first made the acquaintance of this particular animal, he was brought to my house in a basket.

'I went out of the room to fetch my camera, to find on my return that master hedgehog had rolled his basket off the table, crawled out, walked to my fireplace, whence he ousted a dog and a cat, and curled himself up in front of the fire. I put him back into his basket, and sat down to watch him. Within a moment, he had repeated his trick, and regained his warm seat on the hearthrug.

'After growing very tame, he disappeared, as Mr. Westell describes, though in my case he had to climb out of a frame. Perhaps you may think it impossible that a hedgehog can climb, but like Mark Twain's pig, when pursued by a lion, it "had to."—S.N.S.']

## THE MOLE

If the hedgehog is rarely seen, the present species is observed still more rarely. And when it does happen to be seen, it disappears beneath the ground in less time than it takes to write these few lines! Mr. Sedgwick had the good fortune to observe one of these animals hunting for worms and burrowing. More fortunate still, he had his camera with him, and obtained a most interesting and valuable series of pictures revealing the mole at work (see Figs. 14–17). Mr. Sedgwick's notes as to these are most interesting, and we will let him tell the story himself. He writes:—

'My "little gentleman in velvet" was in my own garden, and was placed in a frame in which there were six or seven inches of earth. Here he lived for some time in happiness, and I was able to watch him, and take his picture a good many times.

'He dived about in the earth, wrinkling his nose—which reminded me of nothing so much as an elephant's trunk cut short!—sniffing the air like a dog, and diving again until he found his prey.

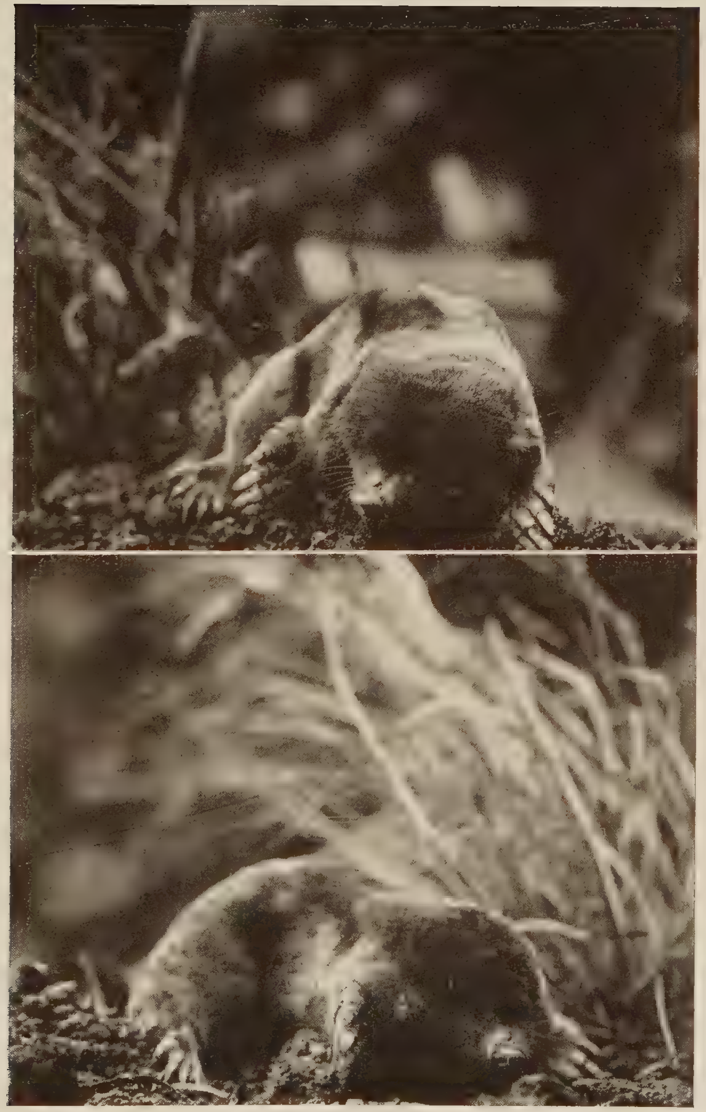
'I saw him eat twenty worms straight off on one occasion, when he caught each one with a rapidity which was astonishing, and chewed it—I had no idea that a worm could sound so "crisp" under the process—sometimes holding the creature in his front paws like a squirrel, sometimes holding one down with one foot, whilst he scratched himself vigorously with the other. At the conclusion of his meal, he sat up on his haunches, and cleaned himself almost like a squirrel, washing his face with his paw, turning round and licking his back and sides until they glowed.

'He drank water rapidly, and once had a swim in his deep saucer, swimming easily and with great speed.

'In burrowing into the ground, he went so fast that he often seemed to sink suddenly into the earth. As the photographs show, he did it really head first, but it generally looked as if he went underground with the whole of his body at once, the fact being that with his front paws he shovelled the earth, with the first motion, sufficiently away to make a hole big enough for his entire body.

'Finally, I am glad to say, he went off on a journey to the open country and I lost him.'

The mole feeds on earthworms, wireworms, and larvæ of the 'daddy-long-legs,' mice, shrews, small reptiles and frogs. It is a voracious feeder, and also burrows for water to quench its thirst. It hunts for the most part at night, but is not idle during the day. The powerful back-turned claws may be seen in two at least of the photographs, as also the turned-up snout. The fur is glossy black —although varieties of yellow, grey, and white specimens have been recorded—and beautifully soft. Thousands are captured by mole-catchers, and the fur made into articles of wearing apparel, such as moleskin jackets and waistcoats. The fur can be brushed by the hand in any direction, for it 'sets' perpendicularly and is not displaced, hence when burrowing underground it offers little resistance to the ground against which it brushes. The mole possesses keen senses of smell and hearing; like the hedgehog, can run rapidly, and can swim. One of its worst enemies is the weasel. The curious mounds of earth thrown up by the mole —called mole-hills—have been seen by nearly every country lad. If you could see the wonderful dwelling underground you would be interested and surprised. It is a circular abode reached by a number of passages leading from the main track. It should be stated, however, that the traps which are set to catch moles are placed in the main track, and the molehills which are thrown up in fields are not the actual dwelling-houses. These are



FIGS. 14 AND 15.—THE MOLE, INTERESTED IN THE CAMERA.
*Note the formidable claws.*

[*see page* 46.

generally placed in hedges. There are more males than females, and great fights take place between the males for possession of a female partner. The latter has about five young ones, though more have been recorded. They are born blind about July or August, the nest being beneath some hillock, not in the usual fortress. Much more could be written of this wonderfully interesting little mammal, but I have already exceeded the limited space at my disposal.

## THE SHREWS

There are three species of these mammals in our country, the common, lesser, and water shrews. These are the smallest mammals we have.

**The Common Shrew.**—This is, as its name correctly implies, one of our commonest shrews, but is not found in Ireland. Numbers of shrews are often found dead during summer, and although they are born fighters, it has not yet been satisfactorily explained what causes this great mortality. The shrew is preyed upon by moles and owls, but is not killed to any extent by man. Cats do not care to eat them. Shrews feed on an insect diet for preference, but although so diminutive, have been known to attack small birds, lizards, frogs, &c. The common shrew makes a nest of dry grass and leaves under the ground, the five to eight young ones being born in July or August. Like the mole, they hunt at night for the most part, but obtain their food above ground, which the mole seldom if ever does. They sleep soundly during winter, and no change in the weather at that season affects them. The common species is reddish above and grey underneath. The most distinctive features are the peculiar snout and the short, bristly, four-sided tail.

**The Lesser Shrew.**—This little shrew is similar in its life and habits to its common relative, but is not so common in England. The teeth are smaller, and it replaces the last-named shrew in Ireland and the Hebrides.

**The Water Shrew.**—A correspondent writes me as under :—

'Recently I accidentally put my foot upon a full-grown water shrew, which I carefully skinned. These are most interesting little animals. I have known one to dive into three feet of clean standing water, and to remain at the bottom longer than I cared to wait for his return! They look like a wriggling streak of silver as they descend. It is my opinion that they carry air down with them on their beautifully soft fur, then inhale it by degrees as required until the danger is passed. By the form of their teeth and mouth I see they are insect-eaters.'

I may add that the water shrew is a rapid swimmer and, as my correspondent states, a powerful diver. It is interesting to note, too, that when the little creature is immersed in water the fur keeps comparatively dry! The fur is black above, white beneath. The tail is more slender than that of the common shrew, and has a fringe of white hairs. My correspondent is correct in his assumption that it is an insect-eater, for it feeds chiefly on insects, the caddis, etc. It has been stated—indeed, seems admitted—that it occasionally takes the spawn and fry of game fish. In our country its natural enemies appear to be the weasel and the pike. It is the longest of the three species of shrews in the British Isles. The female is much smaller than the male. A fourth species used to be thought to exist, but it is now proved that it is only a variety of the present species.

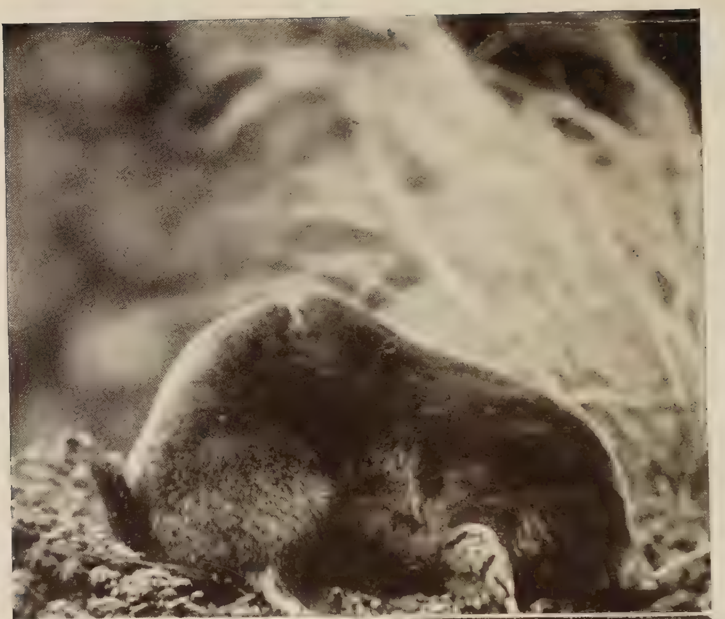
We now come to the mammals included in the order *Carnivora.*

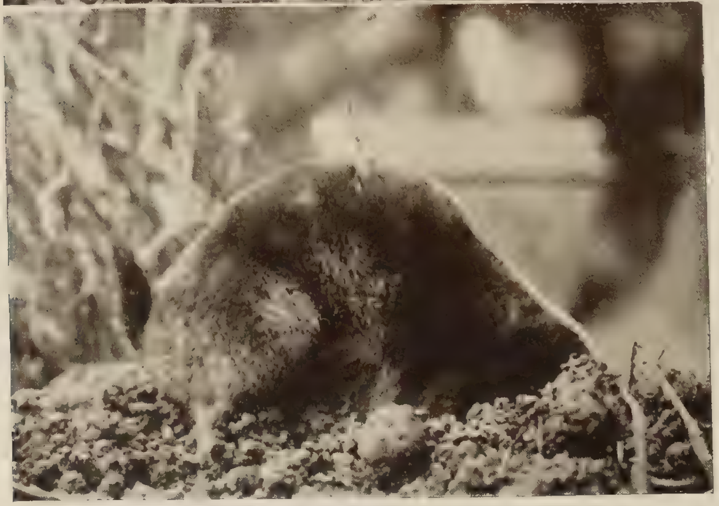
**The Wild Cat.**—So very few of these very handsome but extremely fierce animals are now found in our country—and that only in the far north of Scotland—that a detailed account is unnecessary, as very few readers of this book—if any—are ever likely to see one in a wild state, and the idea of this work is to give a short but sufficient account of just those species which any boy may observe, if he will only use his eyes and ears when rambling along the countryside. This brings us then to

**The Fox**, and even here there is no need to write at any length. As most boys know, this crafty animal is protected because of the pleasure which it is said to afford English men and women who hunt after it. It is not a wild tenant of the countryside which lends itself to observation, and beyond stating that it is most sagacious and crafty, that it does much harm among gamebirds and the feathered inhabitants of the poultry yard, we must pass on to treat of other species included in this order which are more likely to be observed by the reader.

**The Pine Marten** and **the Polecat** are both rare mammals, and do not come within our province to deal with in detail. Both species are still found in a few parts of Great Britain, but not in any abundance. It is interesting to notice, before passing on to a much commoner animal, the stoat, that the well-known ferret is a domesticated variety of the polecat, that the polecat is the largest weasel we possess, and is characterized by the evil smell which the animal possesses.

**The Stoat.**—This is a very beautiful and common mammal, but unfortunately it perpetrates a deal of harm among the gamekeepers' precious gamebirds and their eggs, and thereby hangs a





THE MOLE.

FIG. 16.—HUNTING FOR WORMS; NOTE THE TURNED-UP SNOUT.

FIG. 17.—BURROWING.

[*see page* 46

tale. I have seen as many as forty or fifty of these animals in various stages of decomposition hanging on one keeper's vermin-pole. The stoat also goes by the name of ermine, because of the fact that it changes its coat. In summer it is reddish-brown above, and yellowish on the belly, but in winter it changes to white, the tip of the tail alone retaining its blackness. The object of this change of dress will be guessed; it is one of Nature's wonderful designs for protective coloration, reddish-brown fur in summer being far less noticeable than if it was white, as in winter, and *vice versâ;* yet it is curious to relate that stoats have been found at midsummer in their winter coat. This latter seems to point to Nature defeating its own objects. It is an active animal, a good swimmer, and can run down a rabbit with ease, leaping along in the manner peculiar to the members of this extremely interesting family. It feeds on rabbits, birds, eggs, etc. I knew of an instance of over fifty pheasants' eggs which had been stolen from nests by a pair of stoats and stowed away by these animals, and not one of the eggs was broken or even cracked! The young are born in the spring, and number five or six.

**The Weasel.**—An interesting little mammal often confounded with the stoat, but to be distinguished at once from the stoat by its smaller size. It is very common, and may often be observed in numbers on the keeper's gibbet. It does not seem to do so much harm to game and wild birds and poultry and their eggs as the stoat, its food consisting for the most part of the brains of mice, rats moles, etc. Although nocturnal in their habits, I have often watched these deft little animals creeping silently through a wood or hedgerow during the day. From four to six young are born, and the nest is placed in some bank or hollow tree. The fur is reddish-brown above and white underneath. Specimens have been recorded which had changed their coat in winter, but this may be regarded as a rare event with this species. The tail is not nearly so conspicuous as that of the stoat.

**The Badger,** although not so rare as many people imagine, hardly comes within the scope of this little book.

**The Otter.**—This brings us to the otter, a really beautiful little animal, and one which all who have seen it must surely admire. It is hard to conceive that there are still people who find pleasure in otter-hunting, and others who indiscriminately keep down the otters because of the fish which these animals take. No more ardent disciple of dear old Izaak Walton exists than the writer, but I would willingly have my creel empty if I could have the good fortune to observe one of these animals during my fishing excursions. Although much persecuted, the otter is still found tenanting many streams in Great Britain and

Ireland, as also along some parts of our coast-line. It feeds mostly at night, and although its dietary consists of fish for the greater part, it will not say 'No' to rabbits, poultry, frogs, crayfish, and moorhens. When in some silvery stream capturing fish, the otter is most engaging and attractive, and when on land it can move at a great pace and is exceedingly graceful. The breeding-place is called a 'holt,' and this is usually a hole in a bank. The four or five young are born in the summer. A dog or male otter weighs anything from 20 to 30 or 40 lbs. The animal is characterized by its small and glistening eyes, short and rounded ears, flat head and tail, whiskers on the broad muzzle. Underneath, the soft fur is pale grey, shading off to brown; remainder of fur is darker.

**The Seals.**—There are five or six species of these mammals which visit our coasts, namely, the common seal, ringed seal, harp seal, hooded seal, grey seal, and walrus, but the mere mention of their names must suffice.

## THE RODENTS

We now reach order *Rodentia*, or rodents, with many of which we are on more intimate terms of acquaintance than several of the foregoing animals.

**The Squirrel.**—Among the members of this order the handsome and gay little squirrel is accorded pride of place. Is there any British boy living in the country who has not watched with eager eyes one of these pleasing little rodents scampering up some tree, then, having reached the topmost branches, springing from bough to bough, and finally retreating into the welcome concealment of a fir tree? In the neighbourhood of Bournemouth squirrels are abundant, and in the Talbot Woods there I have observed lazy loafers who call themselves Englishmen taking a keen delight in chasing these animals and shooting at them with catapults. I appeal to every British boy into whose hands this book may chance to come, to be a British boy in the truest sense, to be a bloodless sportsman, to disdain cruelty as unmanly and un-British, and to cause no wild creatures needless pain. But rather to observe animals and other forms of life along the countryside with interest and with intelligence, and endeavour to learn something of wild creatures' ways.

Our photographer has given us, in the accompanying illustration, a very charming picture of a couple of live young squirrels. It is an error to suppose that the squirrel sleeps throughout the winter. It is certainly inactive at that season, but I have noticed it out and about during the very depth of winter. The diet of this animal is a varied one, consisting as it does of nuts, beech-mast, haws, leaf-buds, bark, mushrooms, cherries, birds, and eggs. It is regarded by some gamekeepers as a nuisance, and recently I heard of an instance where no less than five squirrels were shot by a keeper during one morning. Such conduct is brutal and cannot be too strongly condemned.

A store of nuts is laid up during the winter. The 'drey' is placed in a tree—fir trees I have found to be very favourite nesting-places—and is a bulky structure. The squirrel seems to resemble the common wren in nest-building, for many nests or 'dreys' may be found unfinished and unoccupied. Three or four young are born during the summer. A description of this well-known animal is unnecessary, and I merely mention the beautiful bushy tail, bright eyes, tufted ears, and long curved claws. The reddish and white fur turns to greyish during winter. It may surprise the reader to know that this animal is a good swimmer, and recent observations have proved that there are many species of mammals, reptiles, and birds which swim with ease and facility, a fact which has not been recognized hitherto.

**The Dormouse.**—This little rodent is mostly found in the south of our island home. In many of its ways it resembles the squirrel, but it is nocturnal in its habits, and goes to sleep regularly during hard weather. Indeed, it retires to rest for quite six months in the year. Mild weather brings out the dormouse from its winter quarters, when it feeds on the nuts it has wisely stored away, but a return of hard weather sends it to sleep again until the balmy days of spring. The food is very similar to that of the squirrel, but insects are also taken. A hole in the ground, or in a tree, are the selected nesting sites. They have been known, however, to use the nests of birds both for breeding and sleeping purposes. The three or four young are born during the spring, and it is stated that a second litter is produced in autumn. It is reddish above and white below, has no tufts on the ears, nor so prominent a tail as the squirrel.

**The Black Rat.**—This is now a comparatively rare species. It was introduced into this country from the East about five hundred years ago, and has been decreasing ever since. It is still found in a few places in our land and in the Channel Isles. It is a clean animal, and not, as is generally supposed, dirty and offensive in its habits. Although called the black rat, the fur is mostly greyish.

**The Brown Rat.**—Most British boys—whether resident in town or country—know the rat. It appears to have been introduced into this country about two hundred years ago, and whereas its black relative has decreased, the present species has increased by leaps and bounds. It is difficult to describe its food; fish, eggs, frogs, snails, grain, young birds, offal, etc., are greedily devoured. It has a liking for spoons and butter-knives, but these, of course, are not eaten! I know of an instance where many of these articles have been taken by rats from a table and hidden away under floors and in their holes.

A correspondent recently sent me an interesting account about this animal, as under :—

'I have been reading an interesting account of rats, their cunning, how they live—on anything and everything—even to killing and eating each other. The truth of this last I can verify. I was wildfowling in Kent, and got tide-bound on a small island about six feet in diameter at the time, water creeping up inch by inch, and like an open sea all around. To say that I did not "funk" a bit would not be true, as I began to feel serious, if nothing worse, and more particularly so as I remembered being once before caught similarly, and saved in the nick of time by a small passing steamboat. Well, the tide did not quite cover the little island, and whilst waiting for it to recede I noticed a rat-hole at my feet and a small piece of wood that had floated there. I pushed the piece of wood into the rat-hole, and a rat jumped out and dived into deep water quite out of sight. I waited ready to strike when it came up, which it did; but after waiting much longer than I thought a rat could hold its breath, it merely put part of its head out with open nostrils to inhale fresh air. It was killed with the first blow, and proved to be a female, but not a large one. I then pushed the piece of wood again into the hole, and lifted a nest out with the partly eaten body (and the whole of the skin) of a large male; which put me into deep thought. Had this large male fought for its life with the smaller female? I concluded that it was not so, but that he had probably and gallantly *given in to her*, quite in ignorance, of course, of his fate.'

This rat is a prolific breeder, having as many as twelve young ones in one litter, and several litters are believed to be produced in the course of a year.

When a rick is being 'thrashed,' hundreds of rats are often killed by ferrets and dogs, and are also shot. It is too well known to call for a detailed description.

**The Common Mouse.**—This little pest—which so frightens and annoys the ladies—is even better known than the rat. Mr. Sedgwick's illustration helps us to see another instance of Nature's protective coloration; for the little agoute-coloured creature is painted in the same hues as the dull-coloured woods it leaves behind. Like the rat, it has many young ones, but its numbers are kept thinned by Nature's balance-keepers, such as cats, owls, etc. The colour mostly typical is between

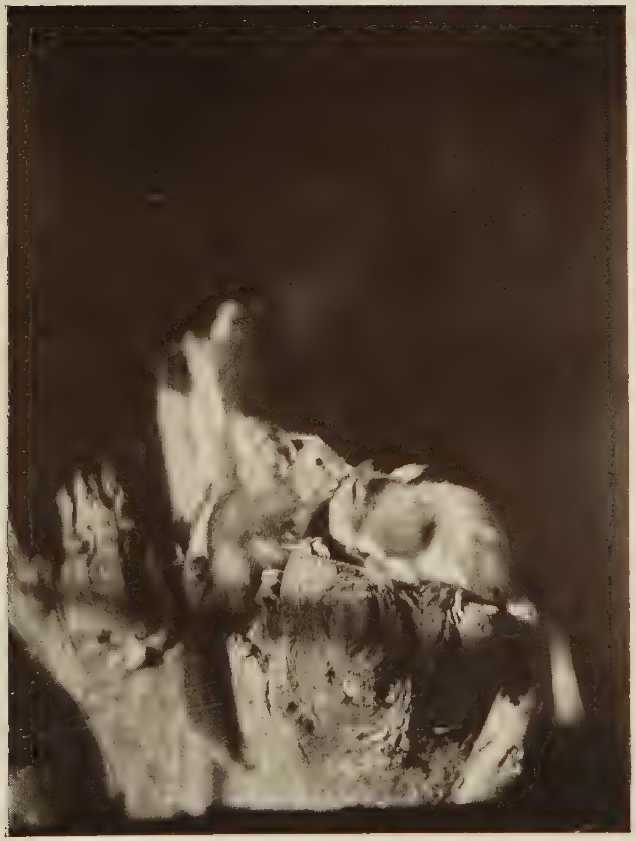


FIG. 18.—SQUIRRELS.

[*see page* 55.

grey and brown. It has a long tail, large ears, and furred feet, which are pinkish in colour.

**The Harvest Mouse.**—This is the smallest member of its family. It burrows underground and in haystacks. The small nest is made up of long, dry grasses, and is placed in the latter, and also among wheat or thistles. Several litters of from five to eight are produced during the year. The food consists of grain and insects. A store of the former is laid up for use during winter. Reddish-brown above, white underneath. It has a long tail, and this it winds round any object in a very interesting manner.

**Long-tailed Field Mouse.**—Recently I was rambling through a favourite bit of woodland. To save myself unnecessary searching for nests the next summer, I detached many old nests from the bushes, trees, and hedges, nests which a wealth of foliage had hidden from view, so that on my future nesting exploits in this neighbourhood I should not be observing tenantless nurseries of a past summer season. I had reached my last nest, and gave it, for some unknown reason, a gentle tap instead of an ugly push with my stick. I was delighted that I was so gentle in my actions, for I found this nest to be tenanted, but not by a bird, as one might have anticipated. It was a low, quickset hedge, and the oval-shaped nest of coarse dry grass was situated near the top. On my tapping it gently, out came the owner, a long-tailed field mouse, looking even more surprised than the wicked intruder. What a beautiful little animal this is, so trim, elegant, and clean! What glistening eyes, interesting habits, nice reddish fur above, with a dark patch on the white breast, and long tail! This species is also called wood mouse, but the name is not by any means satisfactory, for it is more often found away from woods. During winter it becomes inactive, but not actually torpid. It did not seem to resent my rude awakening, and sat looking contentedly at me for quite a minute or two. He curled his tail round a neighbouring twig, and looked a very bright, merry creature. Then, he gathered his wits together, and scampered off along the hedgerow, deftly moving from twig to twig, squirrel-like. This mouse feeds on grain for the most part, and may be said to be a pest of the farmer. It has been known to eat a quantity of putty without any ill effects, and also to devour its own offspring. Its numbers are kept in check by owls, weasels, and foxes.

**The Water-Vole.**—This really beautiful animal is almost invariably but erroneously called the water-rat. Unlike the latter, however, these are almost exclusively vegetable-feeders. It is a splendid swimmer, and when I have been fishing I have often been highly entertained by the antics of this interesting little animal. I have observed it swimming under water for quite a distance, but it looks best I think when swimming with its head just above the surface of the water. Six or seven young ones are born during summer, sometimes near water, at others far away from it. As has been stated, it feeds on a vegetable diet, but has been accused of devouring fish-spawn and waterfowl. Mr. Aflalo, however, emphatically states that this statement is untrue.

It is a dark brown or black above, grey underneath.

**The Field-Vole.**—This species is also called the short-tailed field mouse. It is very destructive, and unless preyed upon by owls and weasels the damage done to agriculture would be enormous. It burrows underground, and nests there. Four or five young are born, and several litters are produced. It hibernates, like the dormouse. It may be distinguished from the water-vole by its much smaller size, shorter tail, and by possessing six pads on the sole of the hind-foot instead of five. The colouring is similar.

**The Bank-Vole,** also called the red field-vole, is the last vole on our list. It is rarer than the last-mentioned species, and is to be identified by the tail being nearly black above and white underneath, and covered with hair. It is reddish above, white beneath.

**The Hare.**—Among British rodents, the hare is one of the most interesting. Its fleetness of foot is well known, as also its alertness. It is not particularly numerous—at least not nearly so as the rabbit—has many natural enemies, and is a solitary animal. The young hare is called a 'leveret,' and when born is much more advanced than the young rabbit, the latter being born blind and naked. The hare does not burrow, like the rabbit, but resorts to a depression in the ground called a 'form.' It feeds on a vegetable diet and also grain. It is further stated to be partial to the bark of young trees. The young are four or five in number, born during summer, and more than one litter is forthcoming. It is greyish-brown or reddish above, with some black on the back and ears, white underneath. It has prominent ears, long and curved claws, long bristles over eyes and mouth.

**The Blue Hare.**—The common hare is replaced in Ireland and the north of Scotland by the blue hare. This latter species is also found in some northern and other English counties. It is known by various other names, such as Irish, Varying and Alpine hare. The blue hare, like the stoat, already described, changes its coat to white during winter. In summer the fur is greyish in colour, the hind legs are shorter than those of the common hare, the ears are shorter, and the fur is softer. It feeds for the most part on the seeds of pine trees and

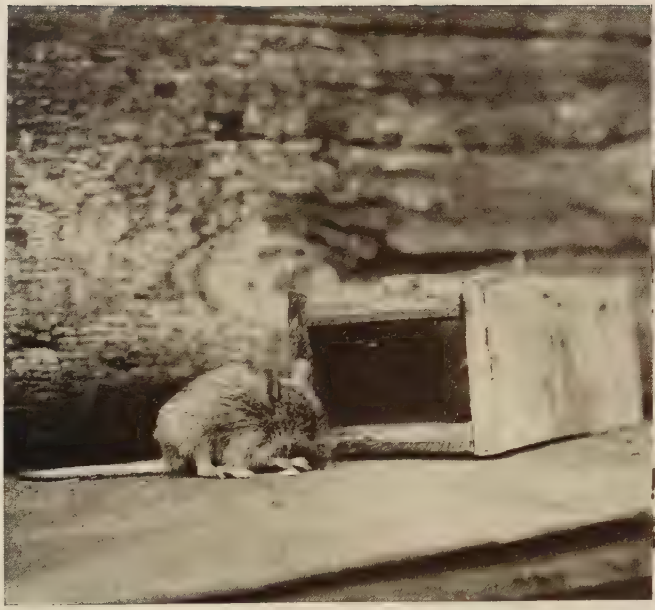


FIG. 19.—COMMON HOUSE MOUSE.

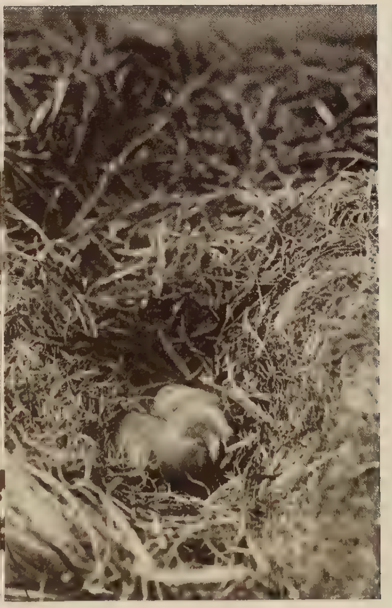


FIG. 20.—FIELD MICE.

[see *page* 60.

grasses. It is not so swift of foot as its common relative, and does not make a 'form.'

**The Rabbit.**—The last of the rodents with which we have to treat is the well-known and extremely prolific rabbit. It has many natural enemies in this country, and owing to this and the fact of so many being sent to market, its numbers are kept within respectable limits. Rabbits were introduced into Australia, however, and have become a perfect pest owing to the absence of natural enemies, essential balance-keepers of Nature. Rabbits congregate in burrows underground called 'warrens,' and some observers state that they breed all through the year. The rabbit can not only swim, but can also climb a tree with much facility. When running, the reader has doubtless noticed the prominent white underneath the tail which acts as a danger signal.

We now reach a very short order, the order *Ungulata*.

**The Red Deer.**—This very beautiful deer is not often seen in a perfectly wild condition, as it is only found in a few districts in our country; but tame herds are to be seen in many English parks, where they are a distinct ornament. The male is the stag or hart, and is identified by its very attractive branched horns or antlers. These are shed after the breeding season. The young is called a 'fawn' or 'calf.' It has been accorded many interesting names, thus—

1st year it is known as a 'Knobber.'
2nd ,, ,, ,, 'Brocket.'
3rd ,, ,, ,, 'Spayad.'
4th ,, ,, ,, 'Staggard.'
5th ,, ,, ,, 'Stag.'
6th ,, ,, ,, 'Hart.'

The female deer is called a 'hind,' and these and the males keep apart except in the breeding season. This deer feeds on acorns, toadstools, grasses, heather and similar food. One young one is born during early summer. The general colour is reddish above, greyer and lighter in winter.

**The Fallow Deer.**—This is another beautiful deer, and has been introduced into our country. It is much smaller than the last-named, and is to be identified by its light brown colour, spotted with white. It is also to be distinguished by its longer tail and palmate antlers—that is, resembling the shape of the hand.

**The Roe Deer.**—This deer is still smaller than the fallow species, and is rare, only being found in a wild state in the north of England and in Scotland. Introduced specimens may, however, be observed in the South. Two, sometimes, but rarely three, young are born during summer. The antlers have three points, each taking a year to grow. The colour of this deer is brown above, white on rump and under tail.

With the order *Cetacea,* the whales and porpoises, it is not within our province to deal, save remarking that there are about seven species of whales found around our coasts, about six species of porpoises, and two or three species of dolphins.

Before concluding our account of British mammals, it is as well to emphasize the fact that whales, porpoises and dolphins, are not fish, but true mammals, as pointed out in our opening remarks, and that from whales most valuable products are obtained, namely, whalebone (which has fetched as much as £2000 per ton); a fluid known as spermaceti, which is of varied use; ambergris (which is valued at £5 per ounce, and which is mostly used in the manufacture of perfumes); and, lastly, oil obtained from the blubber. Whales are easily our largest mammals, many of the species attaining a length of from 50 to 90 feet.

# CHAPTER V

## SOME BRITISH BIRDS

THROUGHOUT the whole natural-history world there is probably no branch of study which has received so much attention as that of birds. And the reasons are not far to seek; their cheery voices; cleverly woven homesteads; beautiful plumage; devotion to their young; diversity in the number, colour, and shape of their eggs; the variety in their mode of living, and their usefulness to man, all tend to make a careful study of the feathered tenants of our country a fascinating and useful hobby.

Since the Rev. Gilbert White's classic *The Natural History of Selborne* was published, converts to the study of British wild life—and birds in particular—have been many, and the last few years have seen an enormous addition to the ranks of those who see pleasure in stalking birds with a bloodless intention, substituting a camera and field-glass for the gun and catapult, and endeavouring to learn something of their lives and habits as animate beings rather than as caricatures of bird-life in some musty private 'collection' or so-called 'museum.'

Mark Twain has a word to say, in his humorous pathetic way, about the species of naturalist 'that writes books about birds, and loves them so that they'll go hungry and tired to find a new bird and kill it.' 'Their name,' he adds, 'is ornithologers; and I could 'a been an ornithologer myself, because I always loved birds and creatures; and I started out to learn how to be one, and I see a bird sitting on a dead limb of a high tree, singing, with his head tilted back and his mouth open, and before I thought, I fired, and his song stopped, and he fell down from the limb, limp like a rag, and I run and picked him up, and he was dead, and his body was warm in my hand, and his head rolled about, this way and that, like his neck was broke, and there was a white skin over his eyes, and one little drop of blood on the side of his head, and laws! I couldn't see nothing for the tears; and I hain't ever murdered no creature since that warn't doing me no harm, and I ain't going to.'

I sincerely hope that all readers of this book will make a vow to be kind and humane to all dumb creatures and to protect and preserve them. The pictures in this book are worthy examples of what may be accomplished by the aid of the camera, and it will be agreed, I think, that these pictorial records of the birds we have bloodlessly stalked are far more interesting and of more educational value than drawers full of skins and eggs, or mounted specimens.

Now what is a British bird? There are about 400 species of birds on the British list, but of these only about 200 species have been known to nest in our country, whilst there are only about 180 species out of the whole 400 so-called British birds which nest among us at the present day. If a thorough wild bird is authentically recorded as having been seen or 'obtained' in Great Britain or Ireland, it is accepted by many ornithologists as a British bird, and is accorded a place on the British list. Although a list compiled on these lines has its value and advantages, we need not in this chapter concern ourselves with these rare stragglers, but rather devote our attention to the common species of birds which nest in our country, and conclude with a short account of those species which visit us regularly during the winter. Now, there are, to be exact, 177 species of birds which nest in Great Britain and Ireland at the present time. Of these 177 species, 36 species are summer visitors only, as under:—

## A LIST OF SUMMER BIRD VISITORS (CALLED MIGRANTS) TO THE BRITISH ISLES

*Ranged somewhat in the order in which they appear*

1. Spotted Crake. March.
2. Ring Ouzel. End of March or beginning of April.
3. Wheatear. End of March.
4. Stone Curlew. March, April, and early in May. Some of these birds are said to remain with us all the year round.
5. Chiff Chaff. End of March.
6. Yellow Wagtail. End of March or early in April.
7. Sand Martin. Early in April, generally before the Swallow or House Martin.
8. Swallow. Middle of April.
9. House Martin. About April 20, usually a little later than the Swallow.
10. Redstart. Beginning to middle of April.
11. Grasshopper Warbler. Middle of April.
12. Whinchat. From middle to end of April, sometimes as late as May.
13. Blackcap. Middle of April.
14. Nightingale. Middle of April; males arrive about ten days before the females.
15. Hobby Falcon. Appears in April.
16. Wryneck. First or second week in April, generally a few days before the Cuckoo, hence it is called the Cuckoo's Mate or Messenger.
17. Cuckoo. In April come he will.
18. Tree Pipit. About middle of April.
19. Common Sandpiper. About middle of April.
20. Lesser Whitethroat. About middle of April, sometimes earlier.
21. Greater Whitethroat. About middle to end of April.
22. Willow Warbler. Second week in April, although it is often recorded as early as March.

23. Kentish Plover. April or May.
24. Corncrake. Last week in April.
25. Red-backed Shrike. End of April, beginning of May.
26. Sedge Warbler. Latter part of April.
27. Garden Warbler. End of April or early in May.
28. Reed Warbler. End of April or early in May.
29. Wood Warbler. End of April or early in May.
30. Turtle Dove. Latter part of April.
31. Quail. During May.
32. Swift. Early in May. One of the latest to arrive, and the earliest to depart.
33. Spotted Flycatcher. May 7 to 20.
34. Pied Flycatcher. May.
35. Nightjar. About the middle to end of May.
36. Marsh Warbler. About the middle of May.

Now it is interesting to know where these birds, which visit our shores and stay the summer, pass our English winter. The following list will show :—

### WHERE OUR SUMMER MIGRANTS SPEND THE WINTER.

1. Spotted Crake. Africa and India.
2. Ring Ouzel. Northern and Central Africa and Asia Minor.
3. Wheatear. Western and Northern Africa to Persia and Northern India.
4. Stone Curlew. Temperate Europe, Northern Africa and South-Western Asia.
5. Chiff Chaff. Shores of the Mediterranean.
6. Yellow Wagtail. Africa.
7. Sand Martin. India and Africa.
8. Swallow. Ethiopia and India.
9. House Martin. South of Abyssinia.
10. Redstart. Northern Africa.

11. Grasshopper Warbler. Northern Africa and Southern Europe.
12. Whinchat. Northern Africa.
13. Blackcap. Northern Africa and Southern Europe.
14. Nightingale. Africa.
15. Hobby Falcon. Africa and India.
16. Wryneck. China and Northern Africa.
17. Cuckoo. Central Africa and Southern India.
18. Tree Pipit. Africa, Persia and India.
19. Common Sandpiper. Africa.
20. Lesser Whitethroat. Africa generally.
21. Greater Whitethroat. Southern Africa.
22. Willow Warbler. Africa and Persia.
23. Kentish Plover. Africa, India and Southern China.
24. Corncrake. Algeria, Egypt, Asia Minor and Palestine.
25. Red-backed Shrike. Africa.
26. Sedge Warbler. Northern Africa and Asia Minor.
27. Garden Warbler. Africa.
28. Reed Warbler. Africa.
29. Wood Warbler. Africa.
30. Turtle Dove. Northern Africa, Egypt and Nubia.
31. Quail. Egypt and Northern Africa.
32. Swift. Africa.
33. Spotted Flycatcher. Africa.
34. Pied Flycatcher. Africa.
35. Nightjar. India and Africa.
36. Marsh Warbler. Africa.

This leaves us with 141 species, and the whole of these are to be found in our country all through the year, and are known as resident birds. From this it must not be thought, however, that none of our resident birds migrate, for they do. They, like us, prefer a change, and shift their quarters, but their places are taken by other visitors of the same species from the North or from across the water, and thus we can observe some individuals right throughout the year. Let me give you an example—the common song thrush. Those birds which I hope you feed in the garden during hard weather, are not perhaps the same birds which sing so beautifully to you during spring and summer, but are probably visitors from the Far North seeking the more temperate climate of the South. Those birds which nest in your gardens and shrubberies during summer have, it may be, migrated South, but as their places are taken by visitors from the North, you are able to observe song thrushes from January to December.

Of these 177 nesting species, some are becoming very rare, such as the kite, harriers, kentish plover, bearded tit, and a few others; three or four are almost on the verge of extinction. Every effort is required to save many of our wild birds, and you British boys can do your part to help in this respect, by setting an example to your chums of how to take an intelligent interest in birds. Do not rob a bird's nest of its eggs or young; do not shoot, trap, or otherwise kill birds, but rather cultivate a spirit of observation upon the animate form.

During the autumn we have bird visitors from the North in the redwing and the fieldfare, bramblings, geese, waders, ducks, and other species which seek our temperate climate during hard weather in their own countries. These winter visitors we will deal with in concluding this chapter.

Now birds, like mammals, are divided up into orders, and the 177 species which nest regularly in Great Britain and Ireland are set out below under the orders to which they belong.

### ORDER *PASSERES* (*or* PERCHING BIRDS)

Mistle Thrush
(*Turdus viscivorus*).
Song Thrush
(*Turdus musicus*).
Blackbird
(*Turdus merula*).
Ring Ouzel
(*Turdus torquatus*).
Wheatear
(*Saxicola œnanthe*).
Whinchat
(*Pratincola rubetra*).
Stonechat
(*Pratincola rubicola*).
Redstart
(*Ruticilla phœnicurus*).
Redbreast
(*Erithacus rubecula*).
Nightingale
(*Daulias luscinia*).
Greater Whitethroat
(*Sylvia cinerea*).
Lesser Whitethroat
(*Sylvia curruca*).
Blackcap
(*Sylvia atricapilla*).
Garden Warbler
(*Sylvia hortensis*).
Dartford Warbler
(*Melizophilus undatus*).
Golden Crested Wren
(*Regulus cristatus*).
Chiff Chaff
(*Phylloscopus rufus*).
Willow Warbler
(*Phylloscopus trochilus*).
Wood Warbler
(*Phylloscopus sibilatrix*).
Reed Warbler
(*Acrocephalus streperus*).
Marsh Warbler
(*Acrocephalus palustris*).
Sedge Warbler
(*Acrocephalus phragmitis*).
Grasshopper Warbler
(*Locustella nævia*).
Hedge Sparrow
(*Accentor modularis*).

Dipper
(*Cinclus aquaticus*).
Bearded Titmouse
(*Panurus biamicus*).
Long-tailed Titmouse
(*Acredula rosea*).
Great Titmouse
(*Parus major*).
Coal Titmouse
(*Parus britannicus*).
Marsh Titmouse
(*Parus palustris*).
Blue Titmouse
(*Parus cœruleus*).
Crested Titmouse
(*Parus cristatus*).
Nuthatch
(*Sitta cœsia*).
Common Wren
(*Troglodytes parvulus*).
Pied Wagtail
(*Motacilla lugubris*).
Grey Wagtail
(*Motacilla melanope*).
Yellow Wagtail
(*Motacilla rayii*).
Meadow Pipit
(*Anthus pratensis*).
Tree Pipit
(*Anthus trivialis*).
Rock Pipit
(*Anthus obscurus*).
Red-backed Shrike
(*Lanius collurio*).
Spotted Flycatcher
(*Muscicapa grisola*).
Pied Flycatcher
(*Muscicapa atricapilla*).
Swallow
(*Hirundo rustica*).
House Martin
(*Chelidon urbica*).
Sand Martin
(*Cotile riparia*).
Tree Creeper
(*Certhia familiaris*).
Goldfinch
(*Carduelis elegans*).
Siskin
(*Chrysometris spinus*).
Greenfinch
(*Ligurinus chloris*).
Hawfinch
(*Coccothraustes vulgaris*).
House Sparrow
(*Passer domesticus*).
Tree Sparrow
(*Passer montanus*).
Chaffinch
(*Fringilla cœlebs*).
Linnet
(*Linota cannabina*).
Lesser Redpoll
(*Linota rufescens*).
Twite
(*Linota flavirostris*).
Bullfinch
(*Pyrrhula europœa*).
Crossbill
(*Loxia curvirostra*).
Corn Bunting
(*Emberiza miliaria*).

Yellow Bunting
(*Emberiza citrinella*).
Cirl Bunting
(*Emberiza cirlus*).
Reed Bunting
(*Emberiza schœniclus*).
Snow Bunting
(*Plectrophanes nivalis*).
Starling
(*Sturnus vulgaris*).
Chough
(*Pyrrhocorax graculus*).
Jay
(*Garrulus glandarius*).
Magpie
(*Pica rustica*).
Jackdaw
(*Corvus monedula*).
Carrion Crow
(*Corvus corone*).
Hooded Crow
(*Corvus cornix*).
Rook
(*Corvus frugilegus*).
Raven
(*Corvus corax*).
Skylark
(*Alauda arvensis*).
Woodlark
(*Alauda arborea*).

## ORDER *PICARIÆ*

Swift
(*Cypselus apus*).
Nightjar
(*Caprimulgus europœus*).
Great Spotted Woodpecker
(*Dendrocopus major*).
Lesser Spotted Woodpecker
(*Dendrocopus minor*).
Green Woodpecker
(*Gecinus viridis*).
Wryneck
(*Iÿnx torquilla*).
Kingfisher
(*Alcedo ispida*).
Cuckoo
(*Cuculus canorus*).

## ORDER *STRIGES*

Barn Owl
(*Strix flammea*).
Long-eared Owl
(*Asio otus*).
Short-eared Owl
(*Asio brachyotus*).
Tawny Owl
(*Syrnium aluco*).

## ORDER *ACCIPITRES*

Marsh Harrier
(*Circus æruginosus*).
Hen Harrier
(*Circus cyaneus*).

Montagu's Harrier
(*Circus cineraceus*).
Common Buzzard
(*Buteo vulgaris*).
Golden Eagle
(*Aquila chrysaëtus*).
White-tailed Eagle
(*Haliaëtus albicilla*).
Sparrow Hawk
(*Accipiter nisus*).
Kite
(*Milvus ictinus*).
Peregrine Falcon
(*Falco peregrinus*).
Hobby Falcon
(*Falco subbuteo*).
Merlin
(*Falco æsalon*).
Kestrel
(*Tinnunculus alaudarius*).
Osprey
(*Pandion haliaëtus*).

## ORDER *STEGANOPODES*

Cormorant
(*Phalacrocorax carbo*).
Shag
(*Phalacrocora graculus*).
Gannet
(*Sula bassana*).

## ORDER *HERODIONES*

Heron (*Ardea cinerea*).

## ORDER *ANSERES*

Grey Lag Goose
(*Anser cinereus*).
Mute Swan
(*Cygnus olor*).
Common Sheldrake
(*Tadorna cornuta*).
Wigeon
(*Mareca penelope*).
Wild Duck
(*Anas boscas*).
Gadwall
(*Chaulelasmus streperus*).
Garganey
(*Querquedula circia*).
Common Teal
(*Querquedula crecca*).
Shoveler
(*Spatula clypeata*).
Tufted Duck
(*Fuligula cristata*).

Pochard
(*Fuligula ferina*).
Eider Duck
(*Somateria mollissima*).
Common Scoter.
(*Œdemia nigra*).
Goosander
(*Mergus merganser*).
Red-breasted Merganser
(*Mergus serrator*).

### ORDER *COLUMBÆ*

Ring Dove
(*Columba palumbus*).
Stock Dove
(*Columba œnas*).
Rock Dove
(*Columba livia*).
Turtle Dove
(*Turtur communis*).

### ORDER *GALLINÆ*

Pheasant
(*Phasianus colchicus*).
Red-legged Partridge
(*Caccabis rufa*).
Common Partridge
(*Perdix cinerea*).
Quail
(*Coturnix communis*).
Ptarmigan
(*Lagopus mutus*).
Red Grouse
(*Lagopus scoticus*).
Black Grouse
(*Tetrao tetrix*).
Capercaillie
(*Tetrao urogallus*).

### ORDER *FULICARIÆ*

Water Rail
(*Rallus aquaticus*).
Spotted Crake
(*Porzana maruetta*).
Corncrake
(*Crex pratensis*).
Moorhen
(*Gallinula chloropus*).
Coot
(*Fulica atra*).

### ORDER *LIMICOLÆ*

Stone Curlew
(*Œdicnemus scolopax*).
Golden Plover
(*Charadrius pluvialis*).

Kentish Plover
(*Ægialitis cantiana*).
Ringed Plover
(*Ægialitis hiaticula*).
Dotterel
(*Endromias morinellus*).
Lapwing
(*Vanellus vulgaris*).
Oyster-catcher
(*Hœmatopus ostralegus*).
Red-necked Phalarope
(*Phalaropus hyperboreus*).
Woodcock
(*Scolopax rusticula*).
Common Snipe
(*Gallinago cœlestis*).
Dunlin
(*Tringa alpina*).
Common Sandpiper
(*Tringoïdes hypoleucus*).
Redshank
(*Totanus calidris*).
Greenshank
(*Totanus canescens*).
Whimbrel
(*Numenius phœopus*).
Curlew
(*Numenius arquata*).

## ORDER *GAVIÆ*

Arctic Tern
(*Sterna macrura*).
Common Tern
(*Sterna fluviatilis*).
Roseate Tern
(*Sterna dougalli*).
Lesser Tern
(*Sterna minuta*).
Sandwich Tern
(*Sterna cantiaca*).
Kittiwake Gull
(*Rissa tridactyla*).
Herring Gull
(*Larus argentatus*).
Lesser Black-backed Gull
(*Larus fuscus*).
Common Gull
(*Larus canus*).
Great Black-backed Gull
(*Larus marinus*).
Black-headed Gull
(*Larus ridibundus*).
Common Skua
(*Stercorarius catarrhactes*).
Richardson's Skua
(*Stercorarius crepidatus*).

## ORDER *TUBINARES*

Stormy Petrel
(*Procellaria pelagica*).
Fork-tailed Petrel
(*Procellaria leucorrhoa*).
Manx Shearwater
(*Puffinus anglorum*).
Fulmar Petrel
(*Fulmarus glacialis*).

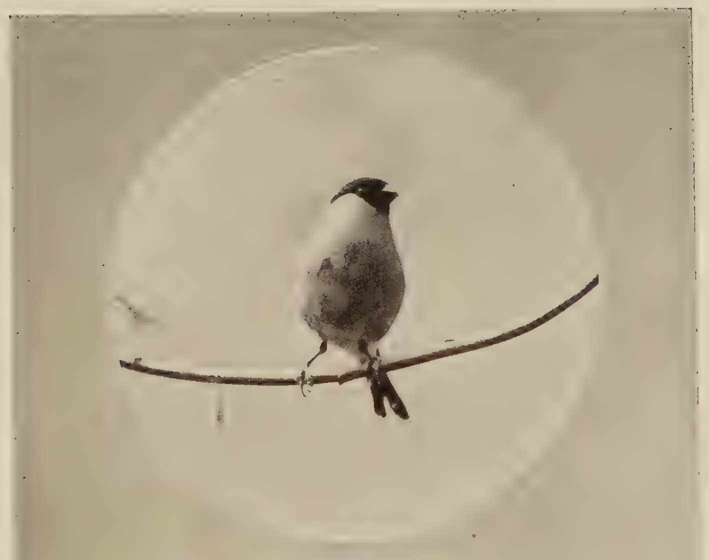


FIG. 21.—BULLFINCH. [*see page* 83.

FIG. 22.—YOUNG CUCKOO. [*see page* 94.

### ORDER *PYGOPODES*

Black-throated Diver
(*Colymbus arcticus*).
Red-throated Diver
(*Colymbus septentrionalis*).
Great Crested Grebe
(*Podiceps cristatus*).
Little Grebe
(*Tachybaptes fluviatilis*).
Razorbill
(*Alca torda*).
Common Guillemot
(*Lomvia troile*).
Black Guillemot
(*Uria grylle*).
Puffin
(*Fratercula arctica*).

Of these 177 species, several, as I have already stated, are very rare, others are rare, uncommon, seldom seen, etc.; and it will now be my aim to set out a few of the chief points of just those species which every British boy can see or hear, if he will keep his eyes and ears open when in the country.

These species are set out in alphabetical order, and the following table shows the 8 points dealt with in the account of each bird :—

1. When their nests are built.
2. Where their nests are built.
3. What their nests are composed of.
4. Number and colour of their eggs.
5. The food they eat.
6. The nature of their vocal powers.
7. Prominent local names by which the bird dealt with is known in various parts of the British Isles.
8. Chief features of plumage.

## BLACKBIRD (*Turdus merula*)

1. As early as March, and as late as September.

2. Bushes and trees, laurels, shrubs, and hedges. I knew of an instance of one built in the axle of an old cart wheel.

3. Dry bents, lined with fine dry grass, a very firm and compact structure strongly woven together with mud and cow-dung.

4. Generally five, but I have found six. Dusky bluish-green, thickly covered with black or brown spots or patches.

5. The same as the song thrush, although not quite so fond of snails.

6. The notes of the blackbird are solemn, mellow, and flowing, unlike those of the thrush, which are short, quick, and varied.

7. Black ousel, oussel (Yorks), blackie, black thrush, garden ousel, merle, oossel, ousel, golden bill.

8. Male, greyish-black, bright orange bill. Female, dark brown, bill same colour. Length, 10 ins.

## BLACKCAP (*Sylvia atricapilla*)

1. May and June.

2. Brambles and bushes, low hedges. Thick shubberies, thickets, and gardens.

3. A frail but neat structure. Dry stalks of

goose-grass, fibrous roots, and similar materials. It has a lining of fine roots and hair. Spiders' webs are sometimes used as a means of binding the nest together.

4. From four to six. They vary in a remarkable manner. The ground colour is dirty-white, blotched, spotted, and streaked with dark brown. Others have a rufous ground colouring, but in these specimens the markings are much darker. Even white eggs have been recorded.

5. Insects and their larvæ, and berries and fruits of various kinds.

6. Decidedly a captivating song, uttered sometimes with curious vibrations of the wings and tail. A pretty twittering takes place as the bird darts in, out, and on the top of a hedgerow. Considered by some little inferior to the nightingale.

7. Haychat, blackie-topper, blackcap warbler, Guernsey nightingale, mock nightingale.

8. Greyish; male has a black head, female has reddish-brown head and plumage somewhat browner. Length, 5½ ins.

## BULLFINCH (*Pyrrhula europæa*)

1. May, June, and July.

2. Brambles, hedges, shrubs, and the like.

3. Fibrous roots and a few twigs for the most part, with a sparing lining of black hair.

4. Generally five. Greenish-blue, spotted, sometimes blotched, with dark brown or black, usually at the larger end.

5. In summer the food consists of insects and larvæ, at other times hips, haws, the seeds of weeds, various other berries and buds.

6. Not a great songster by any means. A pleasant little warble and a plaintive call-note. Possesses the imitative faculty in great perfection. One in my possession learned perfectly the song of the goldfinch. A most interesting and pleasant singer, inasmuch as he tries his hardest to pour forth pleasant notes, but unless one is quite close the song is hardly audible. This bird pairs for life.

7. Olph, hoop, nope, bully, alp, blood-ulf, bud-picker, coalhood, coally-hood, common bullfinch, ting hoop, toney hoop.

8. Male has a glossy black head, red throat and breast; white rump, some white feathers in tail and wings. Female, duller in colour, breast warmish-brown, upper parts brownish-grey. Length, 6¼ ins.

## BUNTING, CORN (*Emberiza miliaria*)

1. May and June.

2. Low down in a hedge, close to the ground, or among coarse grass—and on the ground itself.

3. The outside construction consists of dried grass and straw, with a lining of fine grass, roots, and hair; sometimes the latter is absent.

4. Three to six—generally four. A dull white ground, streaked, and blotched in the manner peculiar to the buntings, with liver-colour, inclining to black. When fresh laid, the markings are easily extinguished. I have come across some eggs almost spotless.

5. Seeds, grain, and insects.

6. Not by any means a great singer, but from its beautiful dark brown plumage attracts our admiration. Warde Fowler says the voice is half-hearted, and reminds him of an old man who used to tell him that he had 'a wheezing in his pipes.' Some have compared it to the breaking of glass.

7. Bunting lark, clod bird, common bunting, whisker bird, writing lark, scribbling lark, bunting, ebb, land bunting, stocking weaver.

8. Upper parts yellowish-brown, with dusky spots; underneath yellowish-white, streaked and spotted with dusky. Length, 7½ ins.

### BUNTING, REED (*Emberiza schœniclus*)

1. March to July.

2. I have generally found the nest of this interesting little bunting in marshy places, low

down among the tangled grasses at the foot of osiers. Some few years ago I found a score of nests all in this position on one day. The nest is never found other than in swampy, marshy places.

3. Dried grass, moss, reed stems or leaves. The lining consists of fine grass, reed flowers, and hair.

4. Four to five. Easily distinguished from those of its relatives by being smaller, of a more ashy-grey ground colour, and the markings jet black and larger.

5. Same as the last mentioned.

6. A bird of the waterside, its song consists of four or five notes, the fifth being long drawn out. It is of a livelier disposition than the others of its family.

7. Black-headed bunting, chink, mountain sparrow, passerine bunting, reed sparrow, ring bird, ring bunting, ring fowl, water sparrow, black-bonnet.

8. To be distinguished by its black head and throat, white breast and collar. Female has the head reddish-brown, white neck not so conspicuous, underneath reddish-white with dusky spots. Length, 6 ins.

### BUNTING, YELLOW (*Emberiza citrinella*)

1. April to August.

2. Generally placed low down in a hedgerow, or bush. Often in a bank, hidden by masses of grass and overhanging herbage. I have found it on the ground.

3. Grasses, with a sprinkling of moss in the foundation, then a layer of finer grasses, and an inside lining of roots and hair. I have often found the nest varying in size—sometimes almost as large as a blackbird's, often as small as a greenfinch's.

4. Generally three, but sometimes more. Dirty white with an ashy tinge, spotted and streaked with dark purplish-brown. The lines are irregular and overlap one another. The egg may be confused with that of the cirl bunting.

5. For the most part, insects in summer and seeds in winter.

6. An agreeable note, but not a vocalist to any extent, its song consisting of one note uttered many times in rapid succession, finishing up with two harsher notes. Its song has been compared to the words 'a little bit of bread and no cheese.'

7. Scribbling lark, skite, yellow hammer, gladdy, golden gladdy, goldie, gooler, gool finch, writing master, writing lark, yeldrin, yeldrock, yellow ammer, yellow yeldring, yellow yeldrock, yellow

yite, yellow yoldrin, yellow yowley, yoit, yoldring, yellow yeorling.

8. Head, neck and underparts golden-yellow, with a little dark olive; dark back, yellow breast with red spots. The female is less gaudy and spotted with dull reddish-brown. Length, 6¼ ins.

## CHAFFINCH (*Fringilla cœlebs*)

1. In April and onwards, but I have not found them after June, though instances have been recorded in July.

2. They much prefer, at least so my experience leads me, hawthorn hedges. Sometimes on the side of a tree, or in a small fork.

3. Of the structure itself one cannot adequately describe it to do it justice. It consists of moss, hairs, feathers and roots, and silver lichen, beautifully moulded together. In my opinion it is the most beautiful nest of our British breeding birds, if we except the long-tailed tit.

4. Generally four or five, but I have found six. Ashy-grey ground colour with intermingling of wine-red and a bluish tinge, spotted with dark brown and black, often over the whole, sometimes at the larger end.

5. Insects and larvæ, and in hard weather seeds and beech-mast.

6. A pretty and lively little song, consisting

in the main of one long trill, starting high, then descending lower, and finishing with an abrupt and bell-like note. The ordinary call-note is merely a 'pink-pink'; and can be imitated by blowing into a key.

7. Beech finch, boldie, buckfinch, charbob, pie-finch, pink, shilfa, copper finch, skelly, spink, spinx, twink, white finch, whit-finch, horse finch, horse dug finch, scobly, buckfinch, wetbird, tink, pink pink.

8. Can be identified by the white tail-feathers, yellow on wings, and red breast. Has a chestnut back with a greenish tinge; the female is duller. Length, 6 ins.

## CHIFF CHAFF (*Phylloscopus rufus*)

1. One of the earliest of our summer visitors. April, May, June.

2. I have generally found the nest in banks, low down. I have seen it in banks far away from a wood, and also in banks on the outskirts of the wood the bird inhabits.

3. Almost domed, dead grass, leaves and moss, with a lining of feathers, which are very abundantly distributed in the interior.

4. Six. White, with specks of dark purplish-red.

5. Insects and their larvæ.

6. Two notes are uttered repeatedly, somewhat

resembling its name. When one hears the welcome 'chiff-chaff,' sometimes at the end of March, in the woodlands, it is most pleasing, for the reason that it is the early harbinger of summer, and his weak notes, monotonously uttered, ever please one because of their associations, and not because of their musical beauty.

7. Arbour bird, dark-footed pettychaps, hay-bird, least willow wren, lesser pettychaps, smallest willow wren.

8. Above, olive-green with a yellow tinge; faint yellowish-white streak over eye, same colour underneath, feathers on leg greyish-white. Length, 4¾ ins.

The illustration given (Fig. 23), serves as an instance of what may be done by quiet and unobtrusive bird-photography. Mr. Sedgwick says—

'My camera, covered with a little hay, was not more than a yard from the bird's nest, and I had to tie the branches back on either side to expose it sufficiently. As, on that occasion, I had no long tube with me to make the exposure with, I had to lie down immediately beneath the camera. The parent-birds watched me whilst I made all these preparations as quietly and as smoothly as I could. Within a very few minutes of the completion, the birds were back again feeding their young, attending to the sanitary arrangements of the nest, utterly unalarmed by my proximity.'

## COOT (*Fulica atra*)

1. April onwards.

2. Near water. Right on the ground or the margin of the mud or water in large reed-patches, or among reeds and other aquatic herbage, often merely floating.

3. Sometimes a large structure, at others, rather small. Leaves of reeds, rushes, sedges, and dead and decaying stems, with a lining of similar materials, but of a finer texture and drier.

4. Seven or eight, and I have found ten, whilst as many as twelve to fourteen have been recorded. Dingy stone-colour, speckled and spotted with minute markings of dark brown.

5. Worms, small fish, and the young shoots of aquatic plants.

6. The call is clear-ringing, often repeated, and has been compared to the words 'k-ō,' 'crew,' or 'kew.'

7. Bald coot, bald duck, belpoot, beltie, common coot, bald-headed coot.

8. Above, slate-grey, with thin white bar across wing ; sooty-black underneath ; white bald patch on forehead ; legs and feet dark green. Length, 18 ins.

## CORMORANT (*Phalacrocorax carbo*)

1. April to June.

2. Ledges of sea-cliffs. When found inland, in tall trees or bushes. They nest in colonies. The

same situation is resorted to year after year, which remark applies to all birds nesting in communities.

3. Dead grass, sea-weed, and sticks. A huge structure and high.

4. Four to six. The eggs are peculiar, in having a white chalky incrustation which is well distributed. This can be easily removed with a knife or other similar instrument; when such is done, the shell is bluish-green.

5. Fish and eels.

6. A harsh scream, and a call-note which M. Hett compares to the words 'kree,' 'kraw,' or 'krell.'

7. Cole goose, gormer, corvorant, great black corvorant, great black and white cormorant, great corvorant, green cormorant, norie, parson, scart, skart, sea crow, Isle of White parson.

8. Black; white throat; white patch on thigh during spring. Female brighter than male, has longer crest and is larger. Length, 3 ft.

## CORNCRAKE (*Crex pratensis*)

1. Towards the end of May or in June.

2. Meadows or fields. Usually in a slight depression.

3. Leaves and dry grass, with a lining of the latter, but finer.

4. Seven to ten. Reddish-white, spotted or blotched with reddish-brown and ash-grey.

5. Snails, slugs, leeches, worms, beetles, seeds of various weeds, and tips of grass blades.

6. Running the finger or thumb along the teeth of a comb (a fine one for preference) imitates the curious note of this bird.

7. Corncrake, beaucrake, corn-cracker, corndrake, cracker, crek, daker hen, gallinule crake, gallinule drake, landrail, meadow crake.

8. About size of partridge. Upper parts of yellowish-brown with darker markings; ash-grey above eyes and on cheeks; white throat; greyish-buff breast; belly white towards middle. Length, 11 ins.

## CREEPER, TREE (*Certhia familiaris*)

1. From April onwards.

2. A hole in a tree. I have also found them in the crevice of a building, but more often between the bark and the bole of a tree.

3. Pieces of bark, grass, dead wood, twigs, lined with hair, feathers, and moss.

4. Six to nine. Similar to those of the blue tit and willow warbler. In cases of this kind identifications can only be carried out with certainty by knowledge of the situations, or seeing the bird.

5. It should be the desire of every lover of

birds to see these hard-working little creatures searching diligently for insects and their larvæ around the tree trunks and branches. First round one side, then with lightning rapidity to the other, they are always busy, and never seem to tire.

6. The song, for such it can be called, consists of three or four shrill notes, which is similar to the call-note, the latter being shrill and high-pitched, and, curious to relate, resembling the word 'treè, treè, treè.'

7. Creeper, common creeper, tree climber, brown wood-pecker, familiar creeper.

8. Yellowish-brown, dark brown, and buff-white; pale streak over eye. Long bill. Length, 5 ins.

### CUCKOO (*Cuculus canorus*)

1. May and June and in the first few days of July. Three young Cuckoos were found in 1898 in a hedge sparrow's nest in Highgate Cemetery as late as September.

2. The egg is generally placed in the nest of a hedge sparrow, wagtail, meadow pipit, or some other insectivorous bird, although not always. It has been found in the nests of more than 120 different species, and among them even that of the moorhen.

3. No remarks necessary.

4. There has as yet been no authentic information forthcoming as to the number of eggs laid by

a single female during her sojourn among us, although five is stated by some authorities. I have found two eggs in the same nest, but never more, though more are found, as mentioned in the case of the one in Highgate Cemetery. The cuckoo's egg is the smallest laid by any British bird in comparison to its size.

As regards the colourings of its egg—a great deal might be written as to the variations. It is impossible for me to give anything more than a general description. The usual colour is pale greyish-green or reddish-grey, more or less closely mottled, spotted, and speckled with darker shades of similar blends.

5. Caterpillars, beetles, lepidopterous insects and larvæ.

6. The well-known double cry of 'kook—oo' is known by every one almost. The song is continued for about eight weeks; when excited, both male and female utter a sort of chattering cry.

7. Cog, common cuckoo, gowk, grey cuckoo.

8. Bluish-ash above, whitish underneath; blackish tail feathers, tipped and spotted with white. The young cuckoo is ash-brown, barred with reddish-brown. Length, 13½ ins.

## CURLEW, COMMON (*Numenius arquata*)

1. Latter part of April, or beginning of May.

2. A depression in the ground serves as a nesting

site for this interesting bird, which is generally selected where it is secluded by a tuft of grass or rushes, or a bundle of heather.

3. Heather twigs, dried grass, rush, or sedge leaves, and the like.

4. Four. Pale greenish-dun, varying to olive-green, and spotted with darker shades of green and dark brown.

5. Frequents sand-banks during winter for food of various kinds, such as crabs and marine insects and worms, and eatables during summer are procured on wild extensive moors.

6. 'Over the marshes crieth a curlew—wild is its music—weird is its home.'

Two notes, from which it has derived its name.

7. Calloo, common curlew, stock whaap, whitterick, whaap.

8. Reddish-ash, mottled with dusky spots; almost white on belly, with dusky streaks; white rump. Female longer than male, measuring 21 to 26 ins.

## DOVE, RING (*Columba palumbus*)

1. March to July. Also, it is said, from August to September.

2. In trees or tall hedgerows. Often found on the outskirts of towns, and even in them. Some are found annually in London.

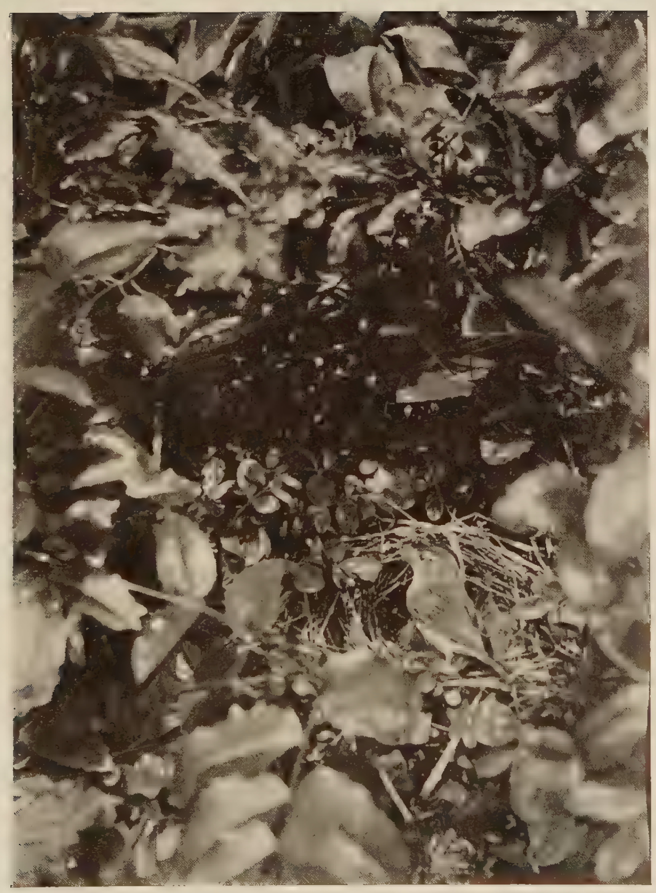


FIG. 23.—CHIFF CHAFF AT NEST FEEDING YOUNG.

[*see page* 89.

3. Small dead twigs. Practically but a platform, the nest, or the so-called nest, being almost flat.

4. Generally two. White. Oval in shape, 1·65 by 1·25 in.

5. Grain of all kinds, young turnip buds and leaves, roots. Said to be extremely destructive, and is much persecuted, but in spite of this is increasing. The farmer forgets, however, the quantity of seeds of charlock and other obnoxious weeds eaten after harvest.

6. Merely a ‘coo,’ oft-repeated.

7. Wood pigeon, oodal, cushat, cushat doo, ring pigeon, ring-dow, luest, luince, zuist, wood lueest.

8. Bluish-grey head, violet and green on sides and back of neck, on each side a patch of white; grey upper parts, reddish-purple underneath, paler on belly; orange bill, whitish towards base; legs and feet bright red. Length, 17 ins.

### DOVE, TURTLE (*Turtur communis*)

1. May to July.

2. A large bush or hedge, and low and sometimes high trees.

3. A very frail structure of twigs and sticks laid crosswise.

4. Two. A beautiful creamy white. About 1·18 by 0·90 in.

5. Seeds of all kinds and leaves of plants; insects and snails.

6. The voice of the amorous turtle dove is well known in our land. It is a soft, agreeable cooing, and somewhat plaintive.

7. Common turtle, spotted-necked turtle dove, wrekin dove.

8. To be distinguished by brownish plumage above and white belly; black and white patches on neck; dusky tail edged with white. Length, 11½ ins.

### DUCK, WILD (*Anas boscas*)

1. April and May, sometimes earlier and later.

2. Among rushes and sedges near water.

3. Reeds and grass.

4. Eleven or twelve. Pale green.

5. Aquatic insects, frogs, fish and their spawn, grain, and so on.

6. Call, 'quack,' also 'quork,' or 'dree—k, dree—k.'

7. Mallard (male), mallart, stock duck.

8. Green head and neck, white collar, four curled feathers in tail; deep chestnut on breast; belly greyish-white; orange-red legs and feet. Female is smaller and general plumage is mottled-brown and buff. Length, 24 ins.

## FLYCATCHER, SPOTTED (*Muscicapa grisola*)

1. May, June, and July. This bird and the swift are generally the latest of our summer visitors.

2. Between the branch of a trained fruit tree and a wall, or in the holes of a wall hidden by foliage. In the holes of aged gnarled trees, upon the ends of beams in out-houses, and in other appropriate places of concealment.

3. Fine grasses, a few hairs, and moss.

4. Four or five. Greyish-white, marked with pale orange-brown spots.

5. Soft insects are practically its only food, and owing to its frequenting gardens and orchards for such, is often wrongly persecuted because of its supposed pilferings.

6. A weak chirp, which is seldom uttered after the production of its young.

7. Beam bird, bee bird, chanchider, cherry chopper, cherry snipe, cherry sucker, cobweb-bird, fig-eater, gray flycatcher, wall bird, white baker, rafter, post bird.

8. Ash-brown above, white underneath, red-tinged flanks. Length, 5½ ins.

## GOLDFINCH (*Carduelis elegans*)

1. From May onwards.

2. I have found it to have a partiality for trees.

It will also build in gardens and orchards, evergreens and bushes.

3. An exceedingly pretty structure, after the style of the chaffinch, but smaller. The materials are similar to those of the latter bird, with the addition perhaps of the seed-down of willow.

4. Four or five. I have most frequently found the larger number. Bluish-white or pale grey, spotted with greyish-purple and red-brown, and at times sparingly streaked with the same.

5. The seeds of weeds, especially those of the thistle. A most useful bird.

6. One of my favourite song-birds, and, judging from the thousands caught and sold by bird-catchers, a favourite everywhere. It is a delicate, harmonious song, and when 'I love you very much' is interspersed in the middle of its trill, the effect is charming. Some of its notes are beautiful, others fall rather flat. One part of the song often reminds me of the skylark's trill. A goldfinch paired with a canary produces splendid singing 'mules.'

7. Thistle finch, brancher, coalhead, draw water, goldie, goldspink, gooldie, goudspink, grey-pate (young), grey kate, king harry, proud-tailor, proud-tail, seven-coloured linnet, red-fronted thistle finch.

8. Front of head and throat blood-red; white cheeks, fore-neck, and under parts; dark brown

back; wings variegated with white, black, and yellow; black tail, tipped with white. Length, 5 ins.

## GREBE, LITTLE (*Tachybaptes fluviatilis*)

1. March to July or August.

2. Near water, among herbage and vegetation there found.

3. The nest is generally floating on the surface, and consists of grasses and aquatic reeds. The bird covers the eggs when leaving the nest, but not always.

4. Four to six. White when laid, but soon become soiled, 1·45 by 1·0 in.

5. Tadpoles, frogs, fish, and various aquatic insects.

6. The call-note is similar to a stick drawn across a rail; its song, if such it can be called, likened to the creaking of a rusty hinge on a wooden gate.

7. Dabchick, tom pudding, arsfoot, black-chinned grebe, didapper, dob-chicken, ducker, small doucker.

8. Dark brown head, neck and upper parts; greyish-white underneath; reddish-chestnut cheeks, throat, and sides of neck; horn-coloured bill; dull green legs and feet. Length, 9½ ins.

## GREENFINCH (*Ligurinus chloris*)

1. Any time from April onwards.

2. In similar situations to the chaffinch.

3. Grass and moss, larger and not so neat as that of the chaffinch. Dr. Greene says the nest is very like that of the canary.

4. Four to six. They vary in size and appearance. White, suffused with bluish tinge, and with reddish or purple spots and streaks, intermingled with some of a darker shade.

5. Buds of trees, seeds, and such like. Much damage is done in gardens by this finch, a charge which is often laid at the door of the sparrow, instead of this bird.

6. Some say this bird cannot be called a songster, but I have heard a greenfinch sing beautifully. Its chief note is a creaking one, something like a bough being blown by the wind. When kept in a domestic state it improves considerably. One of the few birds which sings when flying.

7. Green linnet, greenulf, green grosbeak, green chub, green bird, Joey.

8. Yellowish-green, variegated with yellow and ash-grey. Length, 6 ins.

### GUILLEMOT, COMMON (*Lomvia troile*)

1. Middle of May, onwards.

2. Ledges of rocky sea cliffs.

3. None.

4. One. They vary in an extraordinary manner, and no two are said to be alike. They are all shades, from nearly or quite white to a dark green, some profusely spotted and blotched and streaked with dark colours, others slightly so, or hardly at all.

5. Sprats, and other fish.

6. Hudson describes the voice, thus :—'a hoarse, long-drawn cry, like the beginning of a dog's howl before he has cleared his voice; also a succession of laughter-like notes, and other sounds resembling the cries, guttural and clear, of the black-headed gull; and sometimes, short, barking notes like those of geese and sheldrakes.'

7. Common guillemot, bridled guillemot (a variety), ellygug, foolish guillemot, guillem, kiddaw, lary, lavy, ringed guillemot (a variety), scout, sea hen, skout, tinkershire, willock (young).

8. Blackish-brown above, under parts white. Length, 18 ins.

### GULL, BLACK-HEADED (*Larus ridibundus*)

1. April and May, sometimes in June.

2. The soft marshy ground at the edge of lakes and other waters—in a slight hollow, but it prefers

an island on some lake. Most frequently found in the neighbourhood of the sea.

3. Sedge, or dead or decaying grasses; very slight; often none.

4. Three. At times the ground colour is light blue or yellow, at others green, red, or brown. Some are covered thickly with spots, and again others are hardly marked at all.

5. Often follows the plough inland similar to the rook—for grubs, and over lands, moors, etc., in search of food, as mentioned in the case of the next species dealt with.

6. Sometimes called the laughing gull, owing to the nature of its vocal powers somewhat resembling a mirth-provoking sound.

7. Blackcap, brown gull, crocker, hooded maw, hooded mew, masked gull, mire crow, peewit gull, pickmire, red-legs, red-legged gull, rickim-re, scoulton gull, sea crow.

8. Blackish-brown head (lost in winter); rest of plumage white and grey. Length, 16 ins.

### GULL, COMMON (*Larus canus*)

1. May and June.

2. Somewhat similar to the black-headed gull—on the shores of some low grassy islands, near the sea, in deep bays, lochs, inland lakes. Not very frequently on cliffs.

3. Plants found by the sea-shore, sea-weed, dry grass, heather, stalks, etc. Usually a good-sized structure.

4. Two or three. Some have for a ground colour light blue, or straw colour, others green or brown; some resemble the eggs of the oyster-catcher, others are spotted all over. Again, there are others which are sufficiently well blotched and spotted with ash colour and dark brown; others well streaked with the brown, but with only a few spots of the grey colour.

5. Follows the plough for worms and grubs, and over marshes, moors, and pasture lands for insects, small vertebrates, and carrion.

6. The call is a clamorous 'yak;' and a laughing 'luka, luka, luka;' 'kyah' and 'kree.'

7. Phirgie, blue maa, cob, coddy moddy (young), grey gull (young), mew (immature), marrot, sea cob, sea gull (ALL the gulls often so called), sea maw, sea mall, sea mew, storm gull, umber gull (young), white-footed gull, winter bonnet, winter gull (young), winter mew (young).

8. White head, neck, tail and underparts; greenish-yellow legs and feet; ash-grey mantle; black wings with patch of white. Length, 18½ ins.

### GULL, KITTIWAKE (*Rissa tridactyla*)

1. Latter part of May and beginning of June. Young birds are often found in the nest in July.

2. Ledges of precipitous rocky sea cliffs.

3. Marine vegetation of various kinds, with a dry grass lining.

4. Three. Some are stone-coloured, others are tinged with an olive shade, and some with a bluish cast. Spotted and blotched with ash-grey and two or three shades of brown, chestnut to umber.

5. Small fish.

6. The name of this bird indicates the note. It is composed of three notes, two more quickly uttered than the third, and one long.

7. Kittiwake, annet, tarrock (immature), waeg.

8. Bill greenish-yellow; black legs and feet; deep grey mantle; white head, neck, tail and under parts. Length, 15½ ins.

### HAWFINCH (*Coccothraustes vulgaris*)

1. May.

2. Bushes, arms of trees, in holly, fir trees, among intertangled ivy bowers. Generally from 5 to 25 feet from the ground.

3. Small twigs for the most part, together with stems of plants and lichens, with a lining of hair and roots—not always the former; a loose, but not untidy, structure.

4. Three to five. Greenish-grey, spotted with brown, and streaked with bluish-black.

5. Berries and insects. A great lover of peas.

6. A low plaintive note, not at all unpleasant.

7. Black-throated grosbeak, cherry finch, chuck, cobble bird, common grosbeak, ground wren, haw grosbeak, kate.

8. Has a powerful short bill; black on throat; reddish-brown cheeks and crown; ashy-grey nape; dark reddish-brown back; black wings, white on great coverts; light purplish-red underneath. Length, 7 ins.

## HAWK, SPARROW (*Accipiter nisus*)

1. April to June.

2. In trees, and thorn bushes, and occasionally occupies the deserted nest of a crow; also builds on rocks and sea cliffs.

3. A shallow flat nest of twigs.

4. Five. Whitish tint, blotched, generally at the larger end, with reddish-brown.

5. Birds of all kinds, and is well known as one of the terrors of the farmyard; but the harm done in this respect is nullified by the good it does in being one of the balance-keepers of Nature, more particularly in keeping down the now abnormal numbers of the house sparrow. Moles, mice, slugs, beetles, chafers, etc.

6. A harsh and screaming call, which has been described as representing the word 'mew.'

7. Blue hawk, blue merlin, pigeon hawk.

8. Above, dark bluish-grey; underneath, reddish-white; blue beak; yellow feet. Female brown above, greyish-white underneath, with dark grey bars. Male 12 ins. in length, female 3 ins. more.

### HERON (*Ardea cinerea*)

1. Early. March onwards.

2. In the topmost branches of high trees. It nests in companies called 'Heronries.'

3. Not unlike that of the rook, but flatter, broader and larger.

4. Three or four. Uniform dull greenish-blue.

5. Fish, insects, snails and reptiles. Very fond of rats.

6. A powerful and harsh cry, not unlike the harsh alarm-cry of the peacock.

7. Hanser, harnsea, hearinsew, hegrilskip, hern, heronshaw, heronswegh, jack hern, long-necked heron, moll hern.

8. Bluish-black crest; slate-grey above; white forehead, cheeks and neck, with streaks of bluish-grey, ending with long white feathers on latter; greyish-white underneath; bill yellow. Length, 36 ins.

### JACKDAW (*Corvus monedula*)

1. May and June.

2. Church and other towers, chimneys, ruins, rocks, cliffs, hollow trees, and so on. Sometimes in the burrow of rabbits.

3. At times a very large structure, consisting of dry grass, sticks, straw, feathers, shavings, leaves, wool and other substances.

4. Between three and six. Pale bluish-white, well spotted with ash colour, and light and dark brown. Sometimes these spots are black.

5. Offal of all kinds—mice, young birds, small insects, reptiles, worms and grubs. I have found them exceedingly fond of house flies.

6. A mere 'jack,' but possesses wonderful powers when kept in captivity, and very amusing. Can be taught almost anything, and when properly looked after is a most desirable pet.

7. Daw, jack, kae.

8. Black, with violet reflections on crown and upper parts; grey on back of head and nape; dull black underneath. Length, 14 ins.

### JAY (*Garrulus glandarius*)

1. Towards latter part of April and beginning of May.

2. In a tree-fork in some thick wood, or on the

matted and tangled branches of a fir tree. Also on top of a thick bush.

3. Roots and sticks; small roots and grass.

4. Five or six. Faint dusky green, closely and thickly freckled all over with light brown.

5. Young birds, eggs, worms, snails, insects, fruit.

6. This is indeed the sentinel of the woods. Its harsh scream, 'kak-kak-kak,' is a signal to all others that some one is about, and poachers hate the bird because of its screaming character. Words in which the letter 'R' appears are the more easily learned by this, and in fact any other bird. It possesses the imitative faculty to great perfection when in captivity. A word for the unwise—never cut a bird's tongue to make it speak better! It is a stupid and cruel practice.

7. Blue-winged jay, gay pie, jay-pie or jay-piet.

8. Reddish-grey, darker above; what are known as the greater coverts and the winglet have black, white, and bright blue bars; tail coverts, above and below, white; greyish-white crest, with black streaks. Length, 13½ ins.

### KESTREL (*Tinnunculus alaudarius*)

1. April and May.

2. When the nests of the birds mentioned below are not taken advantage of, it builds on inland and marine cliffs, church towers, etc.

3. The kestrel generally usurps the nest of a crow or magpie.

4. Four. Pale reddish-brown, mottled with a darker tint.

5. Cockchafers, mice, frogs, birds, snails and rats.

6. A sharp, ringing, half-laughing cry.

7. Windhover, kastril, keelie, kistril, mouse falcon, standgale, staengall or steingall, stannel hawk, stannel hoverhawk, stonegall.

8. Dark leaden-grey above; light yellowish-red, with narrow dark streaks on sides, wings and under tail-coverts; blue beak; black claws. The female is light red above, as is also the tail; underneath parts paler than in male. Length, 15 ins.

### KINGFISHER (*Alcedo ispida*)

1. March to July.

2. A hole in a bank by a river is generally chosen, although the nest has been found a good distance from any water. The hole excavated by the industrious sand martin is sometimes chosen, and it has been found in a hole in a wall, and the holes of water-voles.

3. The ejected bones of small fish—an untidy and often dirty nest.

4. From six to eight. Pure glossy white, almost round. Easily distinguishable by their

shape from the egg of any other British breeding bird. 0·9 by 0·75 in.

5. Fish, and aquatic insects when fish are not forthcoming, also tadpoles, or bully-heads.

6. A shrill and piercing note uttered on the wing.

7. Halcyon.

8. Azure-blue back; bluish-green head and wing coverts, with azure-blue spots; a band of red under and behind the eye, which passes into white, and under this a band of azure-green; greenish-blue wings and tail; white throat; orange-red under parts. Both sexes are equally beautiful. Length, 7½ ins. Probably the most beautiful bird now breeding in the British Isles.

## LAPWING (*Vanellus vulgaris*)

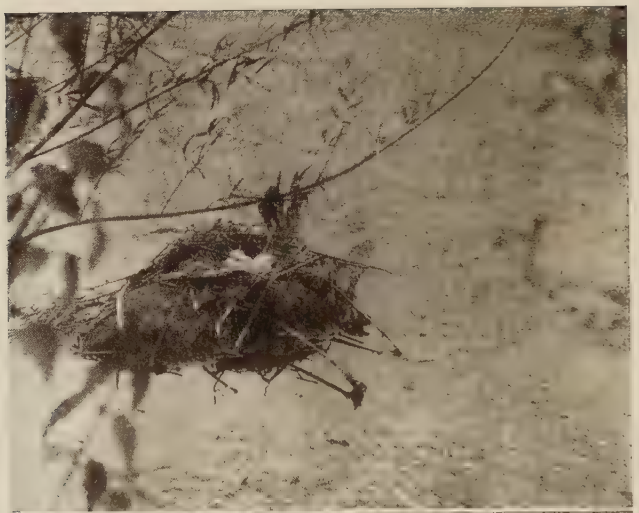
1. April and May, sometimes as early as March and as late as June.

2. A mere hollow in the ground—ploughed lands, marshes, meadows, etc.

3. Dry grasses, bents, a few straws, and sometimes a sprinkling of moss.

4. Four. Olive-green, blotched or mottled with black or blackish-brown. Pointed at one end like a pear.

5. Earthworms, insects, slugs, etc.; a most beneficial bird.



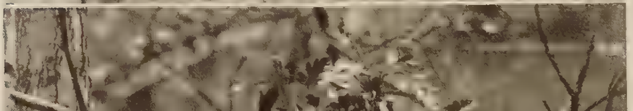


FIG. 24.—NEST AND EGGS OF LITTLE GREBE.

FIG. 25.—MOORHEN'S NEST IN TREE.

[*see pp.* 101 *and* 117.

6. Called lapwing because of the way in which it flaps its wings when flying, and peewit in consequence of its well-known cry, which resembles the latter name.

7. Plover, peewit, bastard plover, common lapwing, crested lapwing, french pigeon, green lapwing, green plover, lapwing sandpiper, peeseweep, piwipe, teachet, tee-whaup, tee-wit, teuchit, teu-fit, tufit.

8. Greenish-black on crown and crest; above, metallic green with purple reflections; bluish-black face, throat, and upper breast; white belly. Length, 12 ins.

## LINNET (*Linota cannabina*)

1. From April, onwards.

2. Generally in a furze, blackthorn or whitethorn bush.

3. Grass, lined with hair. A very compact structure.

4. Five. White, faintly tinged with blue in ground-colour, and spotted with light reddish-brown and purplish-red. Somewhat resemble those of the canary.

5. Seeds of hemp and linseed, whence the popular name. During winter, young buds of fruit trees.

6. It is a remarkably sweet, brilliant and varied

song, consisting of several strains. It is flute-like and altogether beautiful.

7. Brown linnet, blood linnet, common linnet, greater redpoll, grey linnet (young), linnet finch, lintie, lintwhite, red-breasted linnet, red-headed finch, red linnet, rose linnet, song linnet, whin linnet, yellow linnet.

8. Brownish-grey generally; crimson forehead, centre crown and breast; dull white belly; conspicuous white edges on the black wing-feathers. During winter the crimson becomes greyish. Female is much less conspicuous and has no crimson. Length, 5¾ ins.

### MAGPIE (*Pica rustica*)

1. March, April and May.

2. In lofty trees, though not always, for I have found it in trees only 20 feet high. Sometimes in tall hedges and, it is said, in low bushes.

3. Thorny sticks, withered shrubs, clay, dry grasses and fibrous roots. A long structure—often repaired. A circular hole on the side.

4. Six to eight—generally seven. Pale bluish-green, thickly spotted and clouded with olive-brown, and underlying marking of ash-colour.

5. Rats, moles, mice, grubs, worms, snails, fruit, insects, and it is also fond (it is only too true) of sucking eggs and killing young game, etc.

6. A pretty pet and soon tamed, but a regular Paul Pry into any and everything. Readily learns to repeat words. Its native call is a harsh 'chatter.'

7. Poyet, chatterpie, hagister, madge, mag, maggie, maggot, pianet, piet, pyet.

8. Velvet-black on head, throat, neck and back; white underneath; long black tail with lustrous blue, green and copper reflections. Length, 18 ins.

## MARTIN, HOUSE (*Chelidon urbica*)

1. May to August. I have seen young in the nest as late as September.

2. Generally under the eaves of houses, barns and other out-buildings. Under bridges; on the face of rocks and cliffs. I have found a nest on the limb of a tree.

3. Clay and mud mixed with hair and fibres to strengthen it—with a lining of hay, straw, and feathers. The shape is well known, rounded, with an aperture at the top.

4. Four or five. White, generally unspotted, but I have seen them very faintly spotted with red. More oval in shape than those of the sand martin. Size, 0·8 by 0·52 in.

5. Myriads of insects. The good they do is inestimable.

6. Probably no bird warbles as does the martin

when on or near its nest. It is a delicate little song—low in compass—but deliciously sweet and bubbling. One often hears the welcome notes when walking along some crowded thoroughfare and looking round sees nothing, but still the gentle song continues. Then, perchance, the little white bubbling throat may be sighted just discernible in the half-cup-shaped nest.

7. House martin, eave swallow, house swallow, martin swallow, martinet, martlet, meadow martin, white-rumped swallow, window swallow, window martin.

8. Blue-black above; white underneath and on lower part of back; downy feathers on feet and toes. Tail more catapult-shape than most of the swallows. Length, 5½ ins.

### MARTIN, SAND (*Cotile riparia*)

1. May, June, and July.

2. Holes in sand-pits, the holes being at times several feet in length and are bored by this industrious little bird. Also said to be found in holes of river banks, but I have never found them there. They generally build in colonies—I know of one forty miles from London of between two hundred and three hundred birds.

3. Straw, dry grass and feathers—placed at the extremity of the tunnel.

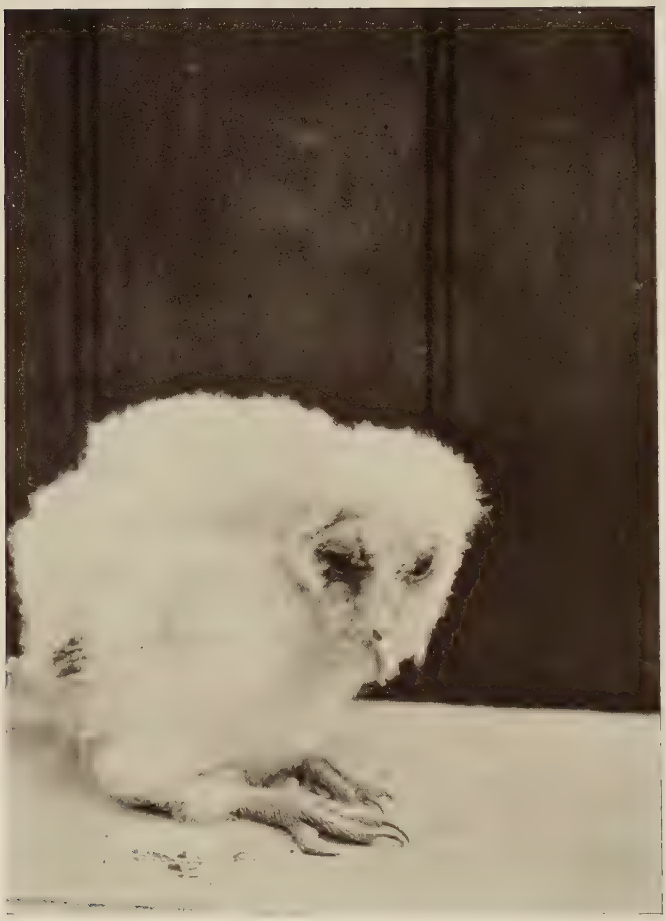


FIG. 26.—YOUNG BARN OWL.

[*see page* 121.

4. Four to six. White and pointed. Longer than those of the martin. Size, 0·7 by 0·48 ins.

5. Insects.

6. A low monotonous note is uttered as the birds fly about in companies, and this is prolonged to a scream when an intruder appears on the scene.

The male bird also possesses a little song, or twitter—not at all unpleasant, but not strong.

7. Bank martin, bank swallow, land swallow, pit martin, river swallow, land swallow, shore bird.

8. Mouse-colour above; other parts white; legs and feet not downy as in house martin but naked, with the exception of a few small feathers towards hind toe; short tail and forked. Length, 5 ins.

## MOORHEN (*Gallinula chloropus*)

1. March to August.

2. Generally among reeds or rushes near or in the water, and it also places it in low bushes, and on the horizontal branch of a tree overhanging the water.

3. Dry rushes and reeds, with a lining of finer sedges and dry grasses.

4. Seven or eight, often ten or twelve. Reddish-white, spotted or blotched with orange-brown.

5. Snails, worms, slugs, insects, and vegetable matter.

6. A ‘crr-o-ok-crr-o-ook.’ A deep guttural note, I always think.

7. Common gallinule, cuddy, gallinule, great gallinule, marsh hen, moat hen, moor coot, more hen, water hen.

8. Dark olive-brown above; slaty-grey head, neck and underparts, streaked with white on flanks; under tail-coverts white; greenish-yellow legs, red above tarsal joint; bill yellow in front, red at base. Length, 13 ins. Female is larger and brighter than male. This is contrary to most birds.

## NIGHTINGALE (*Daulias luscinia*)

1. May and June.

2. On or near the ground in some thick tangled bush or thicket.

3. Dead leaves (oak leaves especially), dry grass and such-like materials, lined with roots, vegetable down, etc.

4. Four or five. Olive-brown or dull greenish-blue.

5. Grubs and insects.

6. As to the vocal powers of this popular songster—in my opinion it is very much overestimated. It is captivating when listened to during the stillness of the summer's night—the deep mellow notes hold one enthralled, but the trilling lay of the lark or the varied notes of the

thrush commend themselves to me in a greater measure. That it is a brilliant song there can be no doubt, but that it has been lauded too much many naturalists agree. People tramp miles to hear the bird, but when heard for the first time there is often a feeling of bitter disappointment. There is something about its melodious voice, however, which cannot fail to arrest attention, and the rambler invariably stops to listen as it pours out its anthem of praise whilst 'in shadiest covert hid.' The song ceases soon after nesting operations are begun.

7. Philomel.

8. Above, chestnut-brown; rufous tail; greyish-white underneath; pale ash on flanks. Length, 6¼ ins.

## NIGHTJAR (*Caprimulgus europæus*)

1. End of May or early in June.

2. On the ground—in woods or some extended waste covered with low bushes or shrubs—where bracken abounds.

3. None.

4. Two. White, marbled and mottled with grey streaks—sometimes brownish—black and faint lilac grey. Oval in shape.

5. Insects of all descriptions—and has a partiality for the cockchafer and the goat moth.

6. What I call a jarring warble. Truly a curious note—heard 'when twilight shadows fall. It can be best imagined by the reader vibrating the tongue against the roof of the mouth. When on the wing, the male utters another sound, which Yarrell says 'is exactly like that which can be made by swinging a whipthong in the air.'

7. Night hawk, churn owl, fern owl, big razor-grinder, dog hawk, door hawk, dorr hawk, European goatsucker, evejar, eve-churr, goatsucker, goat owl, heave jarr, jar-owl, moth-eater, night-char, night-churr, night crow, nocturnal goatsucker, puckeridge, wheel bird.

8. Ash-grey, barred and spotted with brown, black and chestnut; large white patch on inner web of first three primaries, and tips of white on each side of two outer tail-feathers. Length, 10¼ ins.

## NUTHATCH (*Sitta cæsia*)

1. April to July.

2. In the hole of a tree, or sometimes a wall. The hole is plastered up with clay so as just to admit the bird.

3. A bed of dry leaves, flakes of bark, etc.

4. Six or seven. White, spotted with red-brown. Sometimes patches instead of spots. Very like those of the great tit.

5. Insects, beech-mast, acorns, nuts, and berries.

6. A clear-ringing note, oft repeated, and a further note. Mr. Hett gives them as follows:—Call, 'twi-twit, twi-twit;' 'whit-whit-whit,' or 'gou, dek, dek,' or 'twit-wit,' or 'twit-wit-wit' (loud and cheery); 'pip-pip-pip.' Flight, 'si, si, si' (soft and low).

7. Jar-bird, mudstopper, mud-dabber, nuthack, nutjobber, woodcracker, European nuthatch.

8. Bluish-grey above; white cheeks and throat; black eye streak; buff breast and belly; chestnut-red flank and lower tail-coverts; bluish-black beak, white at base of lower mandible; light brown feet. Length, 5½ ins.

## OWL, BARN (*Strix flammea*)

1. May, onwards to July, and sometimes later.

2. Among ivy-clad ruins, antique church towers, in the hollow of old trees, barn-lofts, and similar places of seclusion.

3. A rude nest composed of decayed wood or other similar materials found in holes of trees and the pellets which the birds disgorge. Sometimes, the cast-off feathers.

4. Three or four. White, with a few raised spots occasionally at one end. Two eggs are laid at a time, that is, two which are hatched, and then a second clutch. Size, 1·6 by 1·25 in.

5. Rats, mice, occasionally beetles, moles and

shrews. 'If,' says Mr. Waterton, 'this useful bird caught its food by day, instead of hunting for it by night, mankind would have ocular demonstration of its utility in thinning the country of mice, and it would be protected and encouraged everywhere.'

6. Hoots, snores, and hisses, and Selby says occasionally utters loud screams during its flight. Alarm or anger, snapping of bill.

7. White owl, cherubim, church owl, cream-coloured owl, gilli-howlet, hissing owl, howlet, madge howlett, madge owl, mag oolie, screech owl, yellow owl.

8. Above, tawny-yellow, variegated with brown, grey, and white; white on face and lower parts, with margin feathers tipped with brown. Height, 14 ins.

## OWL, TAWNY (*Syrnium aluco*)

1. March and April. Often very much later.

2. The hollow of a large tree generally, but the old nests of a crow, magpie, dove or squirrel are often selected. Sometimes on the ground, occasionally in barns and out-houses.

3. Similar to the barn owl.

4. From three to four. White. Rounded. 1·8 by 1·52 in.

5. Pilfers round old castles for young birds and

rabbits, rats, moles, and so on. It is also stated it will, like most owls, sometimes take fish.

6. A loud hoot as 'hoo-hoo,' 'hoo-hoo-hoo;' a low whistle, when pleased.

7. Brown owl, black owl, grey owl, howlet, ivy owl, jenny howlet, jinny oolet, wood owl.

8. Above, reddish-brown marked and spotted in various shades of brown, black and grey; reddish-white underneath; leg feathered right down to claws; greyish-yellow beak. This is our largest British owl, measuring 16 ins. in length.

## OYSTER-CATCHER (*Hœmatopus ostralegus*)

1. May and early in June.

2. On rough shingle or rocks.

3. A slight hollow only—a few small stones perhaps, or fragments of shells.

4. Three, sometimes four. A pale stone-colour, with a tinge of yellow, streaked and spotted with rich dark-brown and ash-grey; sometimes blackish and dark grey.

5. Small shellfish for the most part, also shrimps, sea-worms, and other marine creatures.

6. A shrill cry, or piercing whistle, and also shrill, rapid, rattling cries. Hett compares it to:—'heep-heep-heep,' 'kléép, kléép' (rapid and clamorous) or 'quip, quip' (sharp and whiplike). On wing, 'my feel.'

7. Chalder, chaldrick, choldrick, mussel-picker, olive, oyster picker, pianet, pie, pied oyster-catcher, scolder, sea magpie, sea pie or piet, shelder, skelder-drake, tirma, trithcham.

8. Jet black and pure white; orange-yellow bill; purplish-pink legs and feet. Length, 16 ins.

## PARTRIDGE (*Perdix cinerea*)

1. May, and the beginning of June.

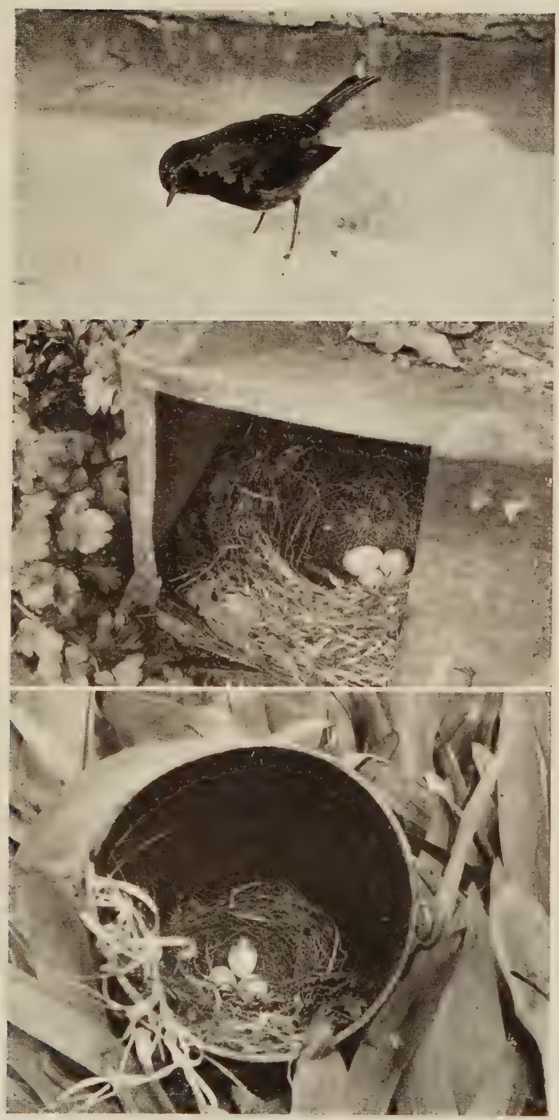
2. The nest of the partridge I have come across in most unlooked-for places. In the bank along a hedgerow, in the middle of a well-worn path, in fields of corn and grass, in a wood among a congregation of leaves, etc.

3. Very little. A few stems of various kinds according to the situation, together with a few dry grasses and dead leaves.

4. From six to twenty, though as many as thirty have been found, but these were the produce of more than one bird. Pale olive brown—the same as those of the pheasant but smaller. Some I have found to be bluish-green.

5. The seeds of various weeds, grain, buds, green leaves, and the young have a partiality for caterpillars of the smaller kind, and the larvæ of ants. The latter are a great delicacy.

6. The cry is compared to that of the guinea fowl, but more metallic, powerful, and far-reaching.



Robin Redbreast.

FIG. 27.—IN THE SNOW. FIG. 28.—NEST IN TEA CADDY.

FIG. 29.—NEST IN MILK CAN.

[*see page* 131.

7. Bird. One of the strangest local bird-names ever bestowed upon any species!

8. Grey and reddish-brown; male to be distinguished by horseshoe patch of chestnut on lower breast. Length, 12½ ins.

## PHEASANT (*Phasianus colchicus*)

1. April and May, sometimes earlier and later.

2. Same remarks apply as to the partridge, but I have found the nest on a stack.

3. See partridge.

4. From twelve to twenty. Pale olive-brown, but I have seen bluish-green, as in the case of the partridge.

5. Acorns, berries, seeds, etc., as well as shoots, insects, and leaves; but, as my friend Dr. W. T. Greene observes, English pheasants are usually fed artificially.

6. A startling alarm-cry, which when uttered almost at one's feet, makes even the most 'seasoned' naturalist jump for the moment. Compared by country rustics to 'cock-up,' oft-repeated.

7. Cock-up, longtail, ring-necked pheasant.

8. Plumage generally marked with spots and bands of brown, red, purple, green, yellow, and black; bare on sides of head, scarlet, spotted minutely with black; long tail. Female less gaudy and feathered on sides of head. Length, 3 ft.

## PIPIT, MEADOW (*Anthus pratensis*)

1. May and June.

2. Similar to the tree pipit, but sometimes in a meadow.

3. See tree pipit.

4. Five or six. The general colour is reddish-brown, mottled over with darker brown.

5. Caterpillars, seeds, and small beetles; often to be seen in winter near sheep folds.

6. Hudson well describes the song thus:—'To sing he soars up to a height of 40 ft. or more, then glides gracefully down, with tail spread and wings half-closed and motionless, presenting the figure of a barbed arrow-head. In his descent he emits a series of notes with little or no variation in them, slightly metallic in sound, and very pleasing. These notes are occasionally repeated as the bird sits motionless on the ground.'

7. Often called the titlark (being confused by some with the tree pipit), as also bog lark, cheeper, grey cheeper, heather-cheeper, heather lintie, ling bird, meadow lark, meadow titling, moor tite, moor titling, moss cheeper, pipit, pipit lark, teetick, teetling, titling, water linnet, wekeen.

8. Above, ash with an olive tinge, dark brown on centre of each feather; dull buffy-white underneath, profusely spotted with dull brown; hind

claw longer than toe and slightly curved. Length, 5¾ ins.

### PIPIT, TREE (*Anthus trivialis*)

1. Arrives in April, and nests in May and June.

2. Generally on a bank—railway banks are very favourite spots. The nest is nicely placed in or near a bush or tuft of grass.

3. Roots, wool, grasses, moss, with a lining of finer grasses and a sprinkling of hair.

4. From four to six. Some are purplish-red, others yellowish-white in ground, clouded and spotted almost all over with different shades of greyish-brown; whilst yet some are chocolate, streaked and blotched with darker tints.

5. Similar to that of the meadow pipit.

6. A delightful, captivating song. It consists of a delicious lark-like trill, with a few deep nightingale-like notes interspersed. Generally uttered when the bird is descending, which is not always on to the low branches of a tree, as has been stated. The song increases in volume as it is uttered, and finishes with one final blast. The season when the tree pipit arrives, together with its lovely melodies, combine to make this bird a general favourite. The song is compared by some writers to that of the canary.

7. Titlark, field lark, field titling, meadow lark, lesser crested lark, lesser field lark, lesser tree lark, pipit, pipit lark, short-heeled field lark, tree lark, grasshopper lark.

8. Ash-colour above, with a tinge of olive, dark brown on centre of each feather; double band of yellowish-white across wing; white on two outer tail-feathers; dull white throat and near eye; buff breast, with dark long spots, lower parts dull white. Length, 6 ins.

### PLOVER, RINGED (*Ægialitis hiaticula*)

1. April, May and June.

2. A mere depression scratched in the shingle or sand on the sea-shore, but at times found inland.

3. Nothing, although occasionally a few pieces of dry grass serve as a lining. It is said that the 'nest' is sometimes paved with small pebbles.

4. Four. As is the case with the eggs of all the plovers, the egg of the ringed species possesses the peculiar pointed shape in a marked degree. Cream colour, spotted and streaked with black.

5. Insects of the sea-shore, worms, shrimps and refuse.

6. A pretty note—rather plaintive and well known to those who stroll by the sea-shore. It is described as a modulated alarm-note, and it has

the habit of betraying its presence by sounding an alarm when approached.

7. Dull-willy, land lavrock, ringed dotterel, sand lark, sand laverock, sandy loo, shell turner, stone-hatch, stone plover, stone runner, wideawake, Alexandrine plover.

8. Black forehead, lores and gorget; white band across forehead; eye stripes, collar, and lower parts the same; light brown on upper parts; orange bill and feet. Black collar not so prominent in female. Length, 7¾ ins.

## PUFFIN (*Fratercula arctica*)

1. May and June.

2. Holes around or in rocks, clefts, crevices, and crannies, often in the burrow of a rabbit—more frequently in the turf near the summit of cliffs.

3. Now and then a sprinkling of grass or roots, but often none.

4. One. Nearly white when first laid, but it soon becomes soiled—that is, spotted and marbled with a tinge of ash-colour.

5. Usually small fish.

6. Call, 'a-r-r' to 'o-r-r,' and sometimes 'orr-a-orr.'

7. Ailsa cock, ailsa parrot, bass-cock, bonger, cockandy, coulterneb, guldenhead, knife-bill, marrot,

mullett, pope, sea parrot, shearwater, skrabe, tammy norie, tommy, tommy noddy, tommy norie, tommy tomnoddy, willock (young).

8. Black above, other parts white; a curious bill, bluish at base, yellow centre, bright red tip; orange-red legs and feet. Length, 12 ins.

### RAZORBILL (*Alca torda*)

1. From the middle of May onwards.

2. In some crevice on rocky precipices and cliffs—or in holes there found.

3. None.

4. One. Less elongated and less in proportion than that of the guillemot, and lacks the infinite diversity of colouring which is so characteristic of the eggs of the latter, the ground colour being invariably whitish, or white, tinged with some light buffy shade, and the spots and blotches, which are sufficiently abundant, are, some of a reddish or chestnut-brown, others of a very deep rich brown.

5. Small fish.

6. Occasionally a long cry is uttered—after the manner of a gull—but lower and more guttural.

7. Alk, auk, bawkee, black-billed auk (young), common awk, falk, helligag, hiogga, marrot, murre, oke, razor-billed auk, scout, sea crow, skort, willock (young).

8. Greenish-black above; dark brown throat;

white underneath. Beak black and axe-like, a white crescent-shaped mark across the deepest part. Length, 17 ins. This bird is the nearest living relative of the now extinct great auk.

## REDBREAST (*Erithacus rubecula*)

1. Early spring to late summer.

2. In many situations. In an ivy-clad stump, a hole in a bank, in old cans, and other utensils, flower pots, holes in a post caused through the rotting away of a part, in a ditch, or rather on the sides, and similar situations.

3. Moss, stalks of various plants, dead leaves, nicely lined with rootlets, wool, or hair.

4. Five or six, occasionally seven, white, more or less freckled with light red.

5. Worms, insects, and scraps.

6. The song of the robin is to my mind a somewhat melancholy one, but nevertheless one which we should highly prize, inasmuch as it is so often heard when nearly all other birds are silent. It consists, in the main, of but a few notes in one compass uttered in the same strain, but it is sung with such apparent consciousness, and what I might call, sweet loneliness, that it cannot fail to find a warm place in the bird-lover's admiration. Never would I molest or injure the robin redbreast, both for its consciousness of protection, its preferment

for man, and its thoroughly honourable song. The alarm-note always reminds me of the sound produced by the unwinding of a fisherman's brass reel.

7. Robin, robin redbreast, bobbie, bob or bob-robin, brow-rhuddyn (Welsh), robinet, ruddock, tommi-liden.

8. Olive-brown above; forehead and breast red, the red edged with grey; white on belly. Female is a little smaller than the male and is not so bright in colour. Length, 5¾ ins. The young are speckled like a thrush, and are often taken home to rear as 'young thrushers!'

## REDSTART (*Ruticilla phœnicurus*)

1. May to July.

2. Among other places, I have found them in a shed or stable—on some rafter—in a hole in a wall, and such situations.

3. Dry grass and roots, moss, with a lining of hair and feathers.

4. Five or six. I once found seven. Pale uniform blue, occasionally tinged with a faint green shade, and often very pointed at one end.

5. Insects.

6. Low, soft and sweet, and generally uttered when the bird is perched on the topmost branch of a low tree. It is a good mimic, and one can

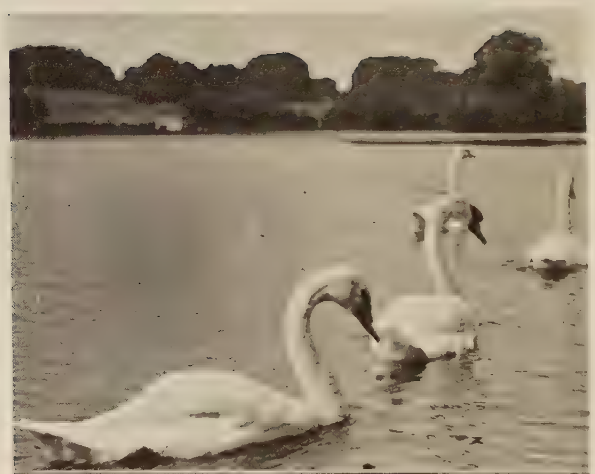


FIG. 30.—A PROCESSION OF MUTE SWANS.

FIG. 31.—HOUSE SPARROW FEEDING IN THE GARDEN.

[*see pp.* 139, 144.

often hear the notes of other birds intermingled with its own song. I have noticed a curious hissing noise made by the parent birds when feeding their young.

7. Fire-tail, bran-tail, fire-flirt, fiery brantail, red-fiery brantail, redtail, white-fronted redstart.

8. Male has white forehead; bluish-grey head and upper part of back; black throat; bright bay on breast and tail, but two middle tail-feathers are brown. The female is grey above, with a prominent red tinge; whitish on throat and belly; pale red breast. Length, $5\frac{1}{4}$ ins.

### ROOK (*Corvus frugilegus*)

1. Begins getting ready early in March, and by April is very busy. Finishes in May.

2. Sometimes in very high trees, at others only 20 or 30 ft. from the ground. They nest generally in companies, called rookeries, but I have seen several isolated nests.

3. A somewhat dirty nest, consisting of small twigs and sticks, plastered with clay and mud, with a lining of grass, wool, straw, and so on. Owing to the old nest undergoing annual repair, it often assumes very bulky proportions.

4. Four to five. Greenish ground colour, more or less intense in shade, plentifully mottled and blotched with darker and varying shades of brownish-

green. Some rooks' eggs strongly resemble those of the crow, others are very similar to those of the jackdaw.

5. Truly, taken all round, a farmer's friend. Destroys thousands of wire-worms and other grubs so injurious to crops. Rooks are said to be very fond of the larvæ of the cockchafer—hence it is these latter destructive grubs are called in some localities rook-worms.

6. Too well known to need mentioning, but I might state that a rook may be distinguished from a crow, other than by the bare patch behind the beak and its plumage, by its not being limited to the utterance of three 'caws' only, and each 'caw' is more rapidly uttered in the case of the rook. I have of late heard rooks 'crooing' very pleasantly and softly.

7. Often called a crow, and the depredations of the latter bird frequently lead to the persecution of the useful rook. Bare-faced crow, white-faced crow.

8. Adult rook has a patch of whitish skin at base of bill, which is absent in a crow; plumage, glossy black, with violet reflections. Length, 18 ins.

## SANDPIPER, COMMON (*Tringoïdes hypoleucus*)

1. May and June.

2. A small hollow in the soil on river or lake banks—usually pretty close to the water's

edge, and generally hidden by a tuft of herbage. It is found at times in turnip or corn-fields.

3. A mere apology for a 'nest;' a sprinkling of sedge, moss, or dried grass.

4. Four. Yellowish-white, with blotches and spots of deep brown or ordinary brown.

5. Worms, insects, and small fry and crustacea.

6. A thrice-repeated, clear, musical note, and during the pairing season the male, whilst hovering in the air, utters a trilling note, which some writers call a song.

7. Fiddler, sand lark, spotted sandpiper, summer snipe, willy wicket, sand lavrock.

8. Ash-brown above, with an olive gloss; white chin; pale ash on neck sides, and breast streaked with dusky white underneath. Length, 8 ins.

## SHRIKE, RED-BACKED (*Lanius collurio*)

1. May onwards. I have found them up to July.

2. In trees and hedgerows, bramble bushes and the like.

3. Grass-stalks, roots, and moss, with a lining of down or wool.

4. Four to seven. Bluish, or greyish-white, spotted at the larger end in a circle with light brown or ash.

5. Mice, shrews, small birds, frogs, lizards, and large insects, caterpillars, and humble bees.

6. It is said that when kept in captivity this bird possesses the talent of imitation, and it has been known to learn to sing several bars of airs with a full-toned musical voice. One is stated to have executed the first part of 'Over the water to Charlie' 'with a spirit that would have gone to the heart of an old Jacobite.'

7. Butcher bird, cheeter, flasher, flusher, jack baker, lesser butcher bird, murdering pie, nine killer, red-back butcher bird, red-backed butcher bird, whiskey john.

8. Grey on crown and nape; chestnut-brown mantle; rose-buff underneath; black tail feathers, white at bases; a frontal band of black and on lores and ear-coverts. Length, 7 ins.

## SKYLARK (*Alauda arvensis*)

1. April to June, but I have found them in July.

2. Generally in a hollow amidst long grass or other herbage, often in the footprint of a cow, or quite close to a meadow-path.

3. Grass, with a lining of finer portions of the same.

4. Four or five. Whitish-grey or yellowish, spotted and freckled, generally thickly, with darker grey, brown, or dark yellow. Some I have seen

nearly black and pointed, others nearly round and decidedly yellowish-brown.

5. Insects, grass blades and seeds.

6. What shall I say of the thrilling lay of the skylark? Probably more poets have written of this bird than any other. I have often heard it singing forty-five minutes at a stretch. It has within its throat a peal of bells—a trilling, delightful, harmonious lay. Shelley calls it 'harmonious madness.' Without its captivating melodies there would be a positive loss to the harmony of Nature's great orchestra.

7. This minstrel is so well known that it has been given no local names—at least so far as I can ascertain. Every one almost knows the skylark—perhaps it is more often called lark—and when we see him suspended in mid-air, we are, like the poet Shelley, captivated and spell-bound, as on quivering wings he pours out his sweet carols.

8. Brown above; faint white streak over eye; yellowish-white, with a brown tinge underneath. Length, 7¼ ins.

## SPARROW, HEDGE (*Accentor modularis*)

1. As early as March, but I have never found them after June, although some say as late as July.

2. In hedges, brambles, shrubs, trees, stacks, and so on.

3. A very pretty structure—the more especially so when one peeps over the top of some sunlit hedgerow and observes the beautiful and highly-coloured eggs. Twigs, moss, hair, dry grass, and wool, the lining being of the third mentioned material.

4. Four to six. Bright blue generally, but I have found them of a dull blue and with a rough, as well as a smooth, texture.

5. Small worms, insects, small seeds; scraps in winter.

6. A pleasing little song which attracts attention, the more so because it is often uttered when most birds are silent. Why this bird should ever be called a sparrow, when almost entirely insectivorous and also possessing undoubted musical powers, I know not. Many naturalists mention it by the better name of hedge accentor.

7. Hedge accentor, muffitie, grosbeak, blue isaac, cuddy, dick dunnock, dunnock, foolish sparrow, hatcher, hempie, hedge chanter, hedge creeper, hedge warbler, shuffle-wing, titling, winter fauvette.

8. Ash-colour crown with brown streaks; bluish-grey on neck, sides, throat, and breast; reddish-brown back and wings with dark brown streaks; buff-white breast and belly. Length, 5½ ins.

## SPARROW, HOUSE (*Passer domesticus*)

1. Any time from March to August, and I really believe they nest in winter sometimes.

2. Houses, outbuildings, hedges and trees, and almost every conceivable situation : thus often confounded with the tree sparrow. They often take up the deserted nest of the martin, and occasionally drive that bird away and then take possession themselves.

3. A mass of hay, straw, feathers, scraps of paper, wool, string, roots of grasses and similar components. A large structure.

4. Five to six, sometimes seven. I have fifty varieties in my collection, some being very much like those of the pied wagtail, blackcap, swallow, swift, tree pipit, and tree sparrow. They are, however, generally dirty white, with a bluish or greenish tinge, spotted, speckled, streaked, blotched, and dashed, or one or the other, with either dark brown, greyish-brown, or dull chestnut-brown. Where the variety exists most is in the markings. Some are distributed uniformly—others are hardly marked at all, and so on.

5. The best reply I can insert here as to what is the food of the common sparrow is in one word, ‘anything.’ If I was to say he does a lot of good by eating obnoxious weed seeds, insects and caterpillars, and so on, I should have a

regiment of sparrow haters asking me what I meant; if I said he was a glutton and pilfered the farmer's crops, I should have sparrow defenders (I am one of them) telling me I ought to be ashamed of myself. He does much good and a deal of harm.

6. The sparrow's chirp amuses and delights me, because of his pugnacity, but it is neither musical nor beautiful.

7. Common sparrow, sparrow, brown sparrow, domestic sparrow, sprug, spagger.

8. Ash-grey on crown, nape, and lower part of back; chestnut-brown back, with black streaks; brown wings, with bars of white; black throat and breast (on male only); white cheeks on neck sides; dull white on belly. Length, 6 ins.

## SPARROW, TREE (*Passer montanus*)

1. From April onwards.

2. Holes of trees, such as pollards, and more especially when they have gone to decay. Sometimes, though not often, in the thatch of old barns and the like. Other situations are in cracks and crevices in rocks, such as sandstone quarries, etc.

3. Straw and hay, and the lining consists of hair, wool, feathers, and other similar tit-bits.

4. Four or five. They do not vary to such

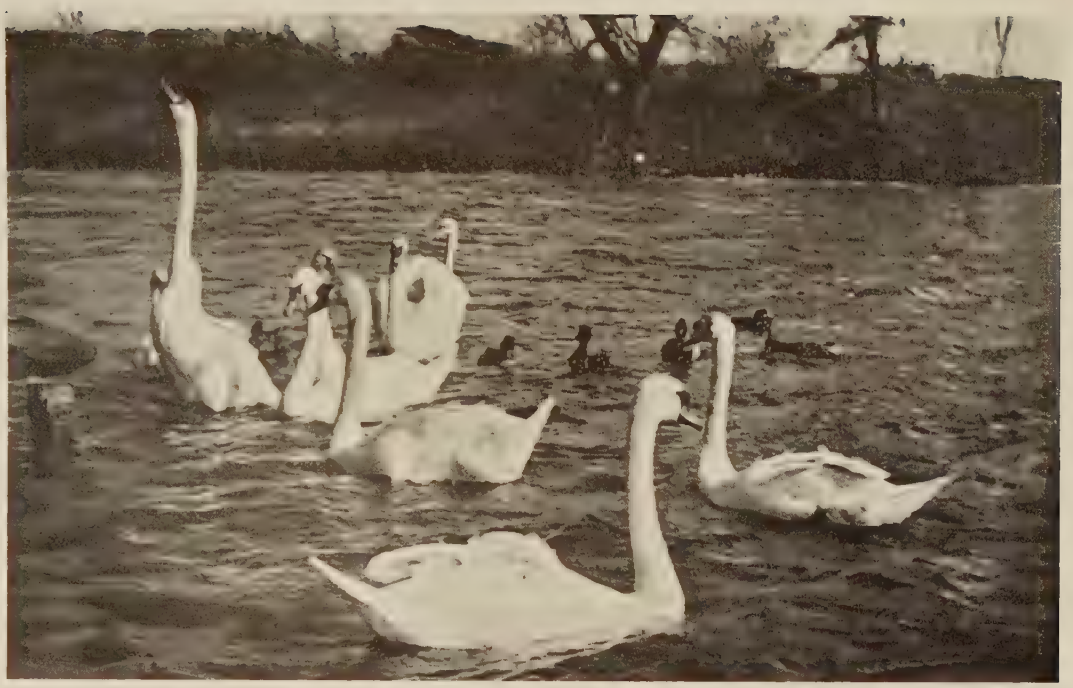


FIG. 32.—MUTE SWANS, LITTLE GREBES AND WILD DUCK.

[*see pp.* 98, 101 144.

an extent as those of the 'common' sparrow. Generally dirty-white, or very light grey, well dashed and spotted with dark greyish or umber-brown.

5. Seeds of weeds and grass, insects, etc.

6. Similar to the house sparrow, but much shriller.

7. French sparrow, mountain sparrow.

8. Chestnut-brown crown and back of head; black throat; white collar almost round neck; upper parts as house sparrow. Length, 5½ ins.

### STARLING (*Sturnus vulgaris*)

1. April to June, but often earlier.

2. Holes in trees, or walls, and the like. Under the eaves of houses, and it often appropriates the holes burrowed out by the sand martin. In Scotland, rats' holes, under stones on the beach, stacks, and so on, are chosen as nesting sites.

3. Grass, straw, sticks, with an odd and end lining of feathers, twine, paper, wool, rags, moss—a by no means tidy nest.

4. Four to six. Beautiful pure pale blue, a trifle pointed at one end.

5. Various grubs, and flies it will devour wholesale. A very useful bird, although it will now and then pilfer in the orchard. It is one of the few species on the increase.

6. Not a brilliant songster, but a wonderful mimic. In its wild state it possesses one long drawn-out whistle, but when kept in captivity it soon becomes famous. One I had imitated to perfection the cuckoo, duck, jackdaw, thrush, and others innumerable, which I could never identify. It also tries hard to chatter in a wild state, but that it is 'a good try' is all that can be said.

7. Brown starling, chepster, sheep stare, sheep starling, shepster, solitary thrush (young), speckled stare, stare, star thrush (young).

8. Black, with green and purple reflections, pale buff tips on upper feathers; yellow beak; flesh-coloured feet, with a brownish tinge. Female spotted underneath as well as above; young, ash-brown and unspotted. Length, 8½ ins.

## STONECHAT (*Pratincola rubicola*)

1. Towards the end of April or the beginning of May.

2. The nest is generally well hidden on or close to the ground. I have found them in an open situation, but generally at the bottom of some bush.

3. Dry grass and moss. A nice lining is made of hair and feathers, and occasionally fine grass. It is a very neat structure.

4. From four to six, sometimes as many as

seven. Pale bluish-green, with a very faint red circlet of spots at the larger end. I have seen them unspotted.

5. Insects.

6. A low complaining note—incessantly uttered, and it also has a slight, but at the same time sweet and pleasant song, which is uttered when perched and hovering.

7. Blackcap, black-headed buschat, blethering tam, blacky-top, moor tite, moor titling, stonechack, stone chaker, stonechatter, stoneclink, stone smick, stonesmith.

8. Black head, throat, beak, and feet; white neck-sides and rump; bright chestnut-red breast, inclining to whitish on belly; black back, wings, and tail, with reddish-brown edges. Female, dusky-brown above, with yellowish-red edges; black throat, with small spots of white and reddish; breast dull red; not so much white on wings and tail. Length, 5¼ ins.

### SWALLOW (*Hirundo rustica*)

1. Arrives in April, and quickly starts nesting operations. I have known young ones in the nest being looked after by the parent birds up to the end of September.

2. Chimneys, barns, outhouses, shafts, underneath bridges, and I knew of one built in a tree.

3. Mud, hay, and straw, with a lining of feathers. The well-known cup-shape nest of the house martin supersedes that of this bird, which is not particularly neat.

4. Four to six. White, spotted and blotched with light and dark browns.

5. Insects, myriads of which it destroys daily, being on the wing, during the summer, sixteen hours a day.

6. A pleasing little twitter, but nothing near so captivating as that of the warble of the martin. Perhaps a dozen notes altogether. An abrupt alarm note.

7. Chimney swallow, barn swallow, house swallow, red-fronted swallow, window swallow.

8. Chestnut-brown forehead and throat; black above, with violet reflections; dull reddish-white underneath; long, forked tail. Female has less red on forehead and less black on breast; under parts white. Length, 7½ ins.

### SWAN, MUTE (*Cygnus olor*)

1. April and May, sometimes in March.

2. Generally near the edge of water—a lake usually, or on some island.

3. Aquatic plants such as rushes and reeds. At times it assumes very bulky proportions.

4. From six to seven. The largest egg laid at

the present time by any British breeding bird. I have had them a dirty greenish-white, and a pure greenish-white. The egg is almost equally pointed at either end, and is rough in texture.

5. Aquatic plants, and accidentally swallows perhaps a few molluscs and insects.

6. In a wild state it has, during the pairing season, a loud, trumpet-like note.

7. Common swan, cygnet, domestic swan, tame swan.

8. Bill reddish-orange; nostrils, lores, tail and basal tubercle black; pure white plumage; black legs and feet. Male trifle larger than female. Length, 60 ins.; about 30 lbs. in weight.

## SWIFT (*Cypselus apus*)

1. One of our latest summer migrants, and one of the earliest to take its departure. Breeds quickly between end of May and first weeks in June.

2. Under the eaves of houses and other buildings. Steeples, ruins, trees, pits, and rocky cliffs.

3. Generally hay, feathers, and other like materials glued together by saliva, and a writer in the *Zoologist* mentions that he has found on many occasions fresh flowers, with long stalks, of the buttercup.

4. Two or three. White. Rather large for the size of the bird. 1·0 in. by 0·66 in.

5. Insects.

6. A not by any means unmusical note, oft repeated, sharp and clear ringing, as the birds wheel round sharply in a circle. I have not heard it, when stationary, ever utter a note.

7. Black martin, cran, deviling, devil swallow, jack squealer, martin du, screamer, screech, screech martin, skir devil, skeer devil, squealer, swift swallow, black swallow.

8. General plumage sooty-brown; greyish-white chin; shiny black bill, feet, and claws. Length, 7½ ins.

## TERN, ARCTIC (*Sterna macrura*)

1. May and June.

2. Amongst shingle. They also lay in a slight depression in sand or gravel. Several pairs generally lay close to one another.

3. I have never seen any. It is stated a few dried grasses or small pieces of seaweed are used, but probably the eggs were placed under or near these, and the materials were not brought to the site.

4. Two or three. Olive, buff, greyish-brown, stone, and other tints constitute the ground colour, and the spots and blotches of blackish-brown and

grey are at times few, and at others many. A most varying egg.

5. Small fish.

6. A powerful scream.

7. Pease crow, white daw.

8. Blood-red bill; coral-red legs and feet; black head and nape; pearl-grey mantle; white rump and tail; underneath the pearl-grey is paler. Length, 14½ ins.

### TERN, COMMON (*Sterna fluviatilis*)

1. May and June.

2. Similar to the Arctic tern, with the exception that it is found sometimes round inland waters.

3. Very few, if any, though dry bents have been recorded as being found in some instances.

4. Two or three. Yellowish stone, grey, or olive colour, spotted and blotched with dark brown and grey.

5. Same as Arctic tern.

6. Same as Arctic tern.

7. Great tern, gull teaser, kirmew, pease crow, picket, picktarny, pirr, rippock, rittock, scobby scraye, scrage, sea swallow, sporre, spurre, tarney, tarrack, tarret, terrick, white daw, big mow.

8. Orange-red bill, legs and feet; plumage generally same as Arctic tern, with exception that lower parts are more whitish. Length same as Arctic tern.

### THRUSH, MISTLE (*Turdus viscivorus*)

1. February onwards. A very early breeder.

2. On the fork of a tree, very frequently of an apple tree of large growth, and covered with moss or lichens.

3. It consists of a basket-work of fine straws and grass, interwoven with moss and lichens. Within this structure is a layer of clay, the lining being of fine fibres and grass.

4. Four to five. Greenish-white, spotted or blotched with chestnut and clove-brown.

5. Its food resembles that of the song-thrush; in the winter it feeds much on berries. It greedily devours cherries, raspberries, and other garden fruit.

6. The notes are loud, but the strain has little variety in richness, though it is a cheering, hopeful song. The song, uttered from the branch of some tall tree, is often heard in the mouth of January. Its harsh, jarring note of anger and defiance is the first to be heard when a bird-enemy is at hand.

7. Heelin (Highland) poyet, screaming thrush, storm cock, bell throstle, bull thrush, fulfar, grey thrush, holm thrush, holm screech, missel bird, misseltoe thrush, screech thrush, shreitch, shrike cock, shrite, screech, skrietch thrush, thrice-cock, yellow fulfar.

8. Ash-brown above; white underneath with a yellow tinge, spotted with black. Length, 11 ins.

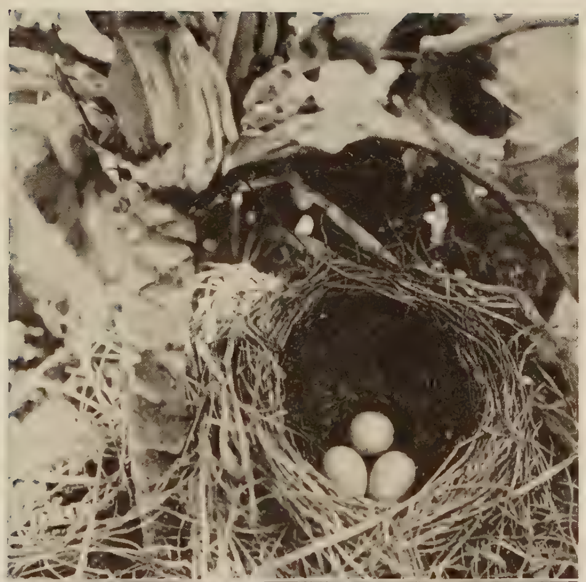


FIG. 33.—NEST OF SONG THRUSH IN CABBAGE.
FIG. 34.—MISTLE THRUSH ON NEST.

[*see pp.* 148, 149.

## THRUSH, SONG (*Turdus musicus*)

1. As early as February, and as late as September.

2. Thick bushes, among clustering ivy, or closely-tangled bowers of dog-roses; in woods, or in evergreens, as the Portugal laurel or holly; in spruce fir plantations; also in a rough bank, among bushes and undergrowth.

3. Externally it is composed of bent twigs, moss, and grass closely interwoven, being plastered within with a very thin smooth layer of rotten wood, cemented by glutinous saliva, and laid as a coating or fine cement upon a thick layer of cow-dung, scarcely carried so high as the brim of the nest. This lining is tough and waterproof, and well calculated for protecting the eggs or young from the keen winds of early spring. Moss is used largely in some districts.

4. Generally five. Blue, with spots of black and sometimes brown. I have found several spotless.

5. Worms, snails, slugs, insects, and berries. Fond of fruit.

6. It is indeed a difficult task to adequately describe the song of this bird. I cannot do better than quote what Charles Dixon says about it:—'If "variety is charming," then the voice of the song thrush must be charming indeed. Its charm consists not only in the clear rich notes themselves,

but in the perfectly marvellous way in which these notes are varied, perhaps never given forth twice in exactly the same order. Each variation is repeated, often given again and again, and the bird seems literally to amuse itself in forming a variety of combinations.'

7. Mavis, thrush, common thrush, thrusher, grey bird, mavish, throstle.

8. Olive-brown above; throat white in middle; ochre-yellow neck, sides and underneath, with spots of dark brown. Length, 9 ins.

## TIT, BLUE (*Parus cæruleus*)

1. April to June.

2. In any hole almost, and at times in most extraordinary places. I have found them to have a great partiality for the holes in lamp posts, letter boxes, and so on. I have also found them in holes in trees, banks walls, and in almost every conceivable situation.

3. Dry grass and moss with a by no means limited lining of hair, feathers, and wool, the whole constructed somewhat loosely.

4. From seven to nine. I have found as many as thirteen. White, speckled and spotted with faint red-brown, generally at the larger end.

5. This is a most useful, but often persecuted, little bird, and is ever diligently searching for

insects and their larvæ. In winter and other seasons it feeds on fruit and seeds, buds, and anything else it can get.

6. For the most part one note, often repeated, something like that of the great tit, but not nearly so powerful. It also utters other weak notes of various descriptions.

7. Bottle tit, blue tomtit, billy-biter, blue-bonnet, bluecap, blue mope, blue oxeye, blue whaup, blue yaup, hickwall, hickmall, jerrybo, nun, pick-cheese, titmall, tomtit.

8. Blue crown, encircled with white; white cheeks with dark blue borders; olive-green back; bluish wings and tail; yellow breast and belly, traversed by dark blue lines. Length, 4½ ins.

## TIT, COAL (*Parus britannicus*)

1. April to June.

2. I have not found this bird's nest in so many situations as the last mentioned, generally coming across it in banks, the forsaken hole of some mouse or mole, in the trunk of a tree, hole in a wall, or in a dead stump in the hedgerow.

3. Similar to that of the blue tit.

4. Between six and nine. Practically indistinguishable from the eggs of the blue tit, though I have observed that the spots are more in the form of a zone than in those of the last named.

5. Same as the blue tit.

6. Similar to others of this family, but shriller.

7. Cole tit, British cole tit, black oxeye, caley tit, coalhead, colemouse.

8. Black crown, throat, and front of neck; pure white cheeks and nape; grey above; bluish-grey wings, with two white bands; white underneath, with a grey tinge. Length, 4¼ ins.

### TIT, GREAT (*Parus major*)

1. Similar to coal tit.

2. The peculiarities in regard to nesting sites are similar to those of the blue tit.

3. See the blue tit's materials.

4. Generally seven or eight, but sometimes only six, and sometimes as many as twelve. They are indistinguishable from those of the nuthatch, but larger altogether than those of any other of this interesting family.

5. Small insects, seeds, fruits, buds, and other paraphernalia. It is well known that a ham or other meat bone hung up in the garden, or elsewhere, will soon attract these birds, if there are any about.

6. A strong, bell-like note, which owing to its peculiarity cannot escape the attention of the most indifferent observer. It is continued with great persistency, and when once heard will never be forgotten.

7. Oxeye, bee-biter, blackcap, black-headed tomtit, great black-headed tomtit, tom collier, tomtit, sit-ye-down.

8. Head, throat and band down centre of breast black; olive-green back; white cheeks, and also spot of same on nape; yellow breast and belly. Length, 6 ins.

## TIT, LONG-TAILED (*Acredula rosea*)

1. This tit has a longer range—from March to June.

2. Furze bushes and hedges generally. I have found them to favour the first named.

3. Lichens, moss, wool, spiders' webs, skeletonized leaves, bits of old newspapers, and feathers. Morris mentions that he knew of a nest containing 3000 feathers. My friend the Rev. Basil H. Davies, dissected one and counted 1,779. It is dome-shaped with a small hole in the centre, and sometimes near the top.

4. From six to ten, but I have found fifteen, and known of seventeen. Pure white or pearly-grey in ground colour, sparingly spotted with light red and a few faint purple marks.

5. The food is composed almost entirely of insects, and is not of such a varied description as those previously mentioned.

6. A prolonged trill, low and delicate. Many converse together in a small, querulous tone.

7. Long tom, ekimol, barrel tit, bottle tit, bottle tom, can-bottle, caper longtail, longpod, long-tailed capon, long-tailed mag, long-tailed mufflin, long-tailed pie, mufflin, mum-ruffin, poke pudding, rose mufflin, tree huck-muck.

8. White head, neck, throat, breast, and part of outer tail-feathers; black back, wings, and six middle tail-feathers; streak of black over eye; tinge of rose-red on sides of back; reddish-white underneath. Tail very long; beak very short. Length, 5¾ ins.

### TIT, MARSH (*Parus palustris*)

1. April to June.

2. In the holes of rotten tree stumps, usually in marshy places.

3. Moss, rabbits' flick, the wool from sheep, the down of the ripe catkins of the willow.

4. Six to eight. I have generally found about seven. White, with more like patches of red-brown, rather than specks and spots, but faint. Very similar to those of the coal and blue tits.

5. See the coal tit.

6. Similar to the coal tit, but not so sharp and loud.

7. Blackcap, black-headed tomtit, joe bent,

little black-headed tomtit, smaller oxeye, willow biter.

8. Black forehead, crown, nape, and head; grey above; dull white cheeks, throat, and breast. Length, 4½ ins.

### WAGTAIL, GREY (*Motacilla melanope*)

1. Towards the end of April and on to June.

2. The nest is said to be generally placed near a stream, but I have found it underneath an overhanging bank, two or three miles from water. In quarries, on shelves of rocks, and on banks, are other situations chosen.

3. Roots, bents, and moss, with a nice hair-lining. A very tidy nest.

4. Five to six. A beautiful egg, pale French-grey, clouded and mottled with a faint and creamy-brown.

5. Insects.

6. A sweet and lively song is uttered in the spring, somewhat similar to that of the swallow. The alarm-note is of a sharp-double description.

7. Dun wagtail, grey wagster, wangtail, winter wagtail, yellow wagtail.

8. Summer, bluish-grey head and back; pale streak over eye; black throat; bright yellow underneath. Winter, whitish on chin and throat, merging into yellow. Length, 7½ ins.

## WAGTAIL, PIED (*Motacilla lugubris*)

1. April onwards. I have found them as late as July.

2. Various. Holes in walls, quarries, roofs of buildings, the eaves of haystacks, stacks of wood, and crevices of every description.

3. A very neat structure, composed of roots, grasses, moss, and it is said, although I have never seen it, leaves—with a lining of hair, feathers, and wool.

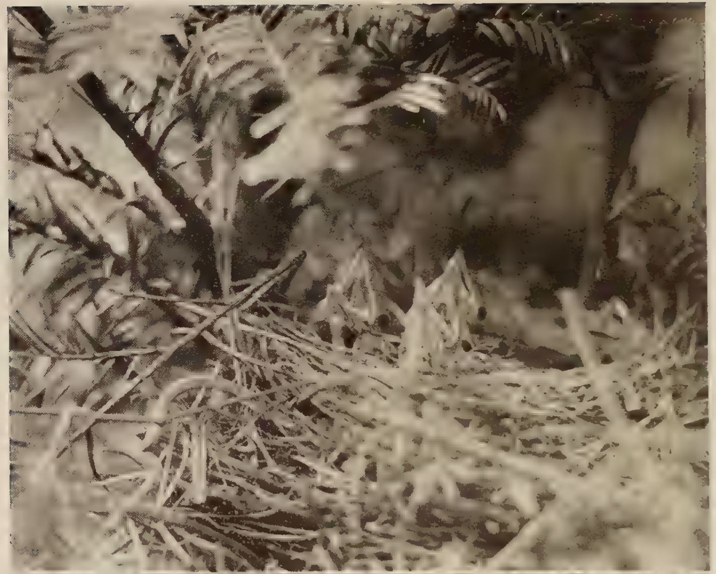
4. Four or five—those found by me have generally been the latter number. Greyish-white, very thickly spotted with greyish-brown. An egg of the house sparrow, somewhat after this description, could easily be mistaken for it.

5. Insects.

6. The call-note is a sharp chirp of two syllables, and the song is a hurried warble. In the spring a still further song is uttered—a very low warble, scarcely to be heard many yards away.

7. Dish washer, water wagtail, washer disher, peggy wash disher, white wagtail, black and white wagtail, nanny wagtail, peggy wash dish, wangtail, wash-dish, washerwoman, winter wagtail.

8. Summer, black and white; black on chin, throat, and neck; little white on side of neck. Winter, back and scapulars ash-grey; white chin and throat, with a black gorget. Length, 7½ ins.



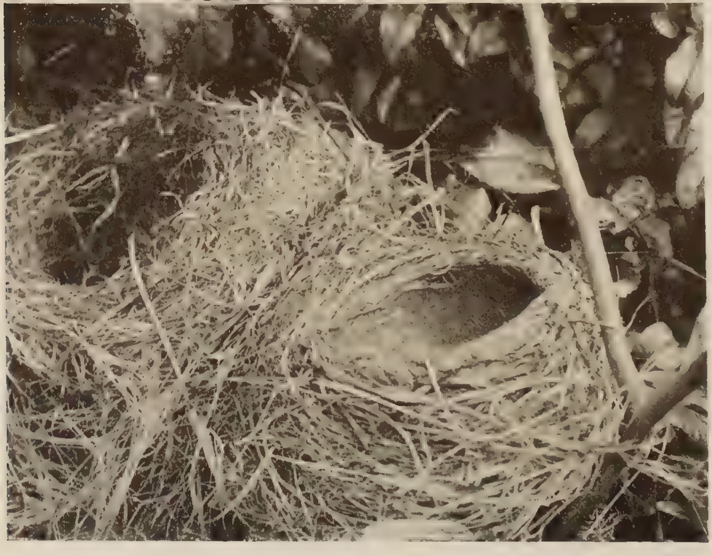


FIG. 35.—YOUNG SONG THRUSHES WAITING FOR FOOD.
FIG. 36.—DOUBLE NEST OF SONG THRUSH: THE FIRST BEING DISTURBED, A SECOND WAS BUILT.

[*see page* 149.

### WAGTAIL, YELLOW (*Motacilla rayii*)

1. May, June, and July.

2. I have found the nest principally on a bank, or at the bottom of a wall where a stone has been loosened or detached. I have also seen it on the ground under a tuft of herbage.

3. Similar to the last-named, with the exception of wool.

4. Five or six. Something like those of the sedge warbler, but rather larger. Whitish, mottled nearly over the whole with yellow-brown and ash-brown.

5. Insects.

6. A sharp double call-note.

7. Cow bird, seed bird, seed lady, spring wagtail, summer wagtail, wangtail, yellow wagster, ray's wagtail.

8. Greenish-olive on top of head, lore, nape, and back; bright streak of yellow over eye; sulphur-yellow below. Length, 6 ins.

### WARBLER, SEDGE (*Acrocephalus phragmitis*)

1. May to June.

2. A low, thick bush by the side of some stream or ditch is the situation in which I have most frequently found the nest of this bird. Occasionally it is found in a tuft of grass. In spite of statements

to the contrary, I agree with Selby and others that the sedge warbler *does* frequent reeds, and that to a very great extent.

3. By no means a wonderful structure, but tidy and neatly made. Stems of plants, moss, coarse grass, with a lining of hair and fine dry grass.

4. Five or six. I have found seven. Pale brown, slightly mottled with darker brown, and I have seen a great many which had a thin dark streak or line upon them.

5. Aquatic insects, slugs, and small caterpillars.

6. A mimic to perfection, and an untiring singer. It is a most curious song, and one can distinguish in it the notes and chirps of other birds. It is delivered in a hurried manner, and the bird seems as if singing an angry song at the listener rather than one which pleases him to utter. The opening notes somewhat resemble the song of the whitethroat, but louder and more strident.

7. Lesser reed sparrow, lesser water sparrow, mock bird, reed fauvette, sedge bird, sedge reedling, sedge wren.

8. Greyish-brown above; broad, distinct yellowish-white streak over eye; pale buff underneath; white throat. Length, 4¾ ins.

**WARBLER, WILLOW** (*Phylloscopus trochilus*)

1. April onwards.

2. On a bank, close to the bottom of a bush, etc.

3. Very like that of the chiff chaff. The nesting materials are also identical.

4. Five to seven, sometimes one or two more. White, with a good many speckles of light red.

5. Insects.

6. One of the most delicious little warblers which visit our shores. It is heard about the same time as the chiff chaff, but possesses a charming, though not long-continued, song. When once heard it will not be forgotten by any one who has ears alert to such sounds. It is a somewhat lonely song—always reminds me of that of the robin, but it is more cheerful. Mr. Warde Fowler says, 'A song which is unique among British birds.'

7. Grosbeak, ground huckmuck, hay-bird, oven bird, peggy whitethroat, Scotch wren, strawsmeer, white wren, willie muftie, willow wren, yellow warbler, yellow wren.

8. Above olive-green, with a tinge of sulphur-yellow; above eye broad streak of latter; bright yellow on sides of head and throat; remainder of under plumage pure white. Length, nearly 5 ins.

## WHEATEAR (*Saxicola œnanthe*)

1. April onwards.

2. In the North on moors and wilds of the mountains, in the South in crevices of walls, under stones or clods.

3. The nest is not one which can be said to be either well built or a work of art. It is composed of dry grass, wool, bents, moss, and hair.

4. Four to six, but as many as eight have been found. Similar to the stonechat sometimes, but generally spotless, pale greenish-blue.

5. Insects.

6. A soft and sweet song, which is often uttered as the male hovers over his mate, expanding the feathers.

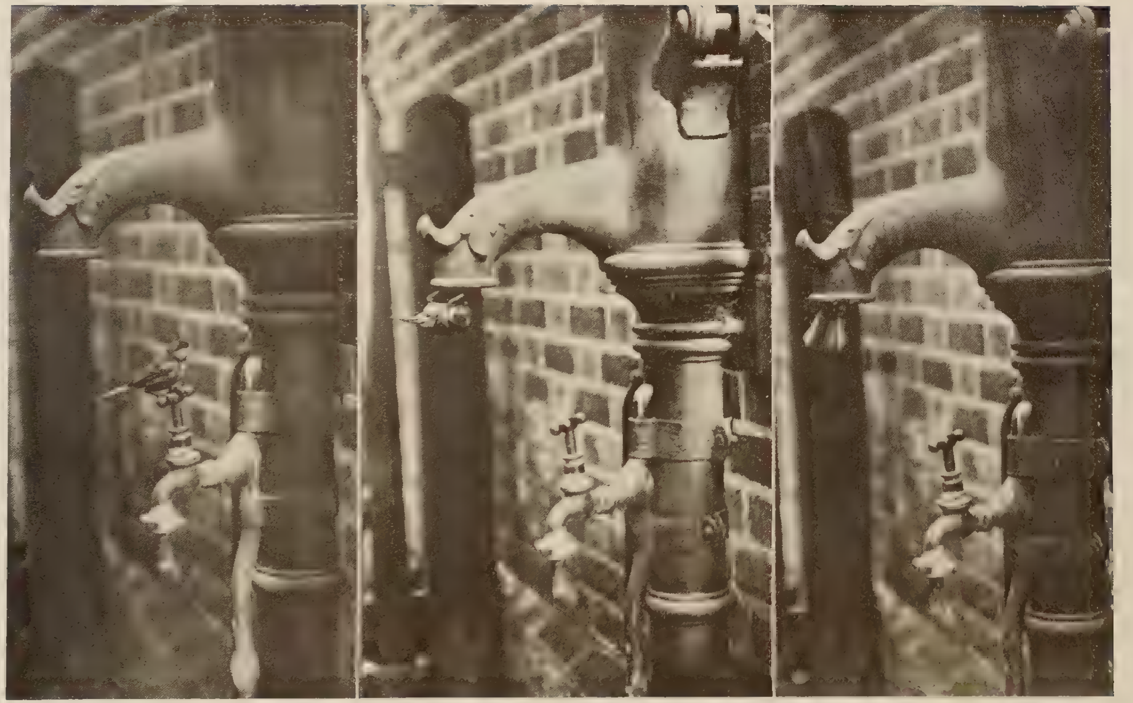
7. Chack, chack bird, chacker, chickell, chicker, clod-hopper, English ortolan, fallow-chat, fallow-finch, fallow-lunch, fallow smick, fallow snatch, snorter, whiterump, whitetail, stone chacker.

8. Bluish-grey above; stripe over eye and under parts white. During autumn reddish-brown above. Female ash-brown above, tinged with yellow, and eye stripe of a dingy colour. Length, 6½ ins.

## WHINCHAT (*Pratincola rubetra*)

1. May and June.

2. Furze and other commons and heaths are



GREAT TITMOUSE'S NEST IN A PUMP.

FIG 37.— ABOUT TO ENTER THE SPOUT. FIG. 38. "ARE YOU THERE?" FIG. 39.—ALMOST HOME

[see page 152.

the haunts of this bird, and its nest is placed on or close to the ground. It is well hidden, and is found with the utmost difficulty, although one may be almost treading upon it.

3. Grass, coarse outside, finer inside, moss and straws. Thin roots and horsehair are sometimes used.

4. Four to six. The eggs of the stonechat, whinchat, and wheatear are all somewhat alike, but the one under consideration is more the colour of a hedge sparrow's, but less rounded at either end.

5. Insects, small beetles, worms, grubs, etc.

6. A low warbling song, similar to that of the redstart.

7. Ring fowl, bank sparrow, grasschat, whin bushchat, furze chat.

8. Dusky brown above, with reddish-yellow edgings; broad white streak over eye; white throat and neck sides; bright yellowish-red neck and breast; large white spot on wings and base of tail; yellowish-white belly and flanks. Female duller and white spot on wing smaller. Length, 5¼ ins.

## WHITETHROAT, GREATER (*Sylvia cinerea*)

1. May to July.

2. Bramble bushes and nettles I have found to

be the favourite situations chosen. It is also built in thick clumps of herbage not far from the ground, and on hedge-banks.

3. A frail but very neat structure. Very fine grasses are employed, together with a lining of hair.

4. Five or six. I have often found the larger number. The colourings and markings vary to a great extent. Green, or yellow, in various shades, is the general colour, blotched or spotted with ash-grey or brown.

5. Small caterpillars, and a little fruit.

6. A pretty, delicate little warbler, but by no means what I should call a strong song or one possessing much variety. Often uttered on the wing. Utters a curious scolding note.

7. Common whitethroat, whitethroat, beardie, charlie miftie, hay-chat, jack-straw, megg cut-throat, muffit, muff, muftie, muggy, nettlecreeper, nettlemonger, peggy whitethroat, whantie, wheetie-why bird, white-throated warbler, hay tit.

8. Ash-grey head and reddish-brown above; white underneath, tinged faintly with rose colour. Female lacks rosy tint on breast. Length, 5½ ins.

## WHITETHROAT, LESSER (*Sylvia curruca*)

1. May to July.

2. Similar to the greater species.

3. Somewhat after the style of the last named, but with the addition of grass-bents and stalks of other plants combined with the webs of spiders, lined with hair and roots. A deep nest.

4. Four or five. White, speckled, mostly at the larger end, with ash or light brown. Very different and smaller to those of the last named.

5. Minute caterpillars and aphides, also fond of fruit.

6. A hurried little song, consisting in the main of one or two notes. It is cheerful and pleasing.

7. Babillard, brake nightingale, hay-jack, jack-straw, white-breasted warbler, whitethroat.

8. Smoky-grey and brown above; almost pure white below. Length, 5¼ ins.

### WOODPECKER, GREEN (*Gecinus viridis*)

1. Latter end of April or beginning of May.

2. In the trunk of a tree, particularly have I found them in the fir, in a hole which the bird usually makes itself. Size of hole about 2¼ ins. in diameter.

3. Such fragments as congregate whilst the hole is bored.

4. Four to seven. White-glossy, as are all the eggs of the woodpeckers. 1·3 by 0·92 in.

5. Insects, acorns, nuts, fruit, and seed. Often visits the ant-hills for their eggs.

6. A laughing note. The woods would seem strange, and it would be a positive loss to harmony, without the voice of this bird. It is supposed in many places that when this woodpecker is heard often, wet weather is approaching. Thus it is called rain-bird.

7. Awl, awl-bird, eaqual, ecle, French pie, gally, hew-hole, high hoe, pick-a-tree, poppinjay, rain bird, rain fowl, tongue bird, whet-ile, whittle, woodspite, woodwall, yaffer, yaffingale, yaffle, yaffler, yappingale, large green woodpecker.

8. Olive-green above; yellow rump; greenish-grey underneath; crimson crown, back of head, and moustaches; black face. Female has less crimson on head and black moustaches. Length, 13 ins.

### WREN, COMMON (*Troglodytes parvulus*)

1. Any time from March onwards.

2. Anywhere. Crevices of rocks, posts, hedges, palings, among the foliage on a matted hedgerow, out-houses, ivy-bowers, on banks; as I have said, almost anywhere.

3. A domed structure, with a small hole near the top. Moss, dead leaves and lichens, lined with fine moss, hair, and feathers. Often harmonizes with the surroundings—when built near bracken and brown foliage, dead leaves are used; when

built in a haystack, hay is used. Many nests are built which are unoccupied.

4. From six to nine or ten. On one occasion I found as many as thirteen. White, with almost invariably a few pale delicate red spots.

5. Small spiders, wood-lice, chrysalids, etc.

6. What shall I say of the sweet song of the wren? It often reminds me of the tree pipit's, but on a lesser and lower scale. When the sun is scorching hot, he pours out his pretty melodies—when the earth is snow-clad, he sings with increased vivacity and power. This bird endears itself to all who are brought in contact with it. For the size of bird, the song is loud and well maintained.

7. Wren, jenny wren, birritie, chitty wren, cutty wren, jilliver wren, jimpo, katy wren, kitty wren, ran, tidley wren, tidley creeper, titty wren, tomtit, tope, vraun.

8. Mostly reddish-brown above and below; pale narrow streak over eye; dusky tail, with black bars. Length, 3½ ins.

## WREN, GOLDEN-CRESTED (*Regulus cristatus*)

1. April to June.

2. Under a branch of a tree--fir trees especially.

3. Leaves, moss, fine grass, spiders' webs, lichens, well bound together—with a feather lining.

4. Six to ten. Pale yellowish-white, with a

zone at the larger end of dull light reddish-brown.

5. Insects.

6. A little song from a little bird, consisting of but two notes. These are oft-repeated and quickly. ‘When hovering,’ Hudson says, ‘it does not sing, but emits a series of sharp, excited, chirping sounds.’ It is the smallest British bird.

7. Bee bird, golden-crested kinglet, golden-crested regulus, golden-crested warbler, herring-spink, kinglet, whiskey, woodcock pilot, wood titmouse.

8. Above, olive with a yellow tinge; ash-coloured cheeks; bright yellow crest in front, orange behind, bounded by two black lines; yellowish-grey underneath. Female is duller and crest is lemon-colour. Length, 3½ ins.

### WRYNECK (*Iÿnx torquilla*)

1. May and June.

2. In holes of trees—but this bird does not itself bore them. Those made by Nature are generally the ones chosen.

3. Chips of decayed wood.

4. From six to eight, sometimes more. Glossy white, oval in shape.

5. Caterpillars and insects. Very fond of ants and their eggs. Said also to be partial to elder-berries.

6. A high-pitched, clear, far-reaching note—repeated many times. It often hisses.

7. Cuckoo's mate, cuckoo's maid, cuckoo's messenger, emmet hunter, long tongue, pay-pay, rinding bird, snake bird, tongue bird, turkey bird, dinnick, willow bite.

8. Reddish-grey above, with irregular brown and black spots and lines; from back of head to the back a broad band of black and brown; dull white underneath, with a buff tinge; arrow-headed markings on breast and belly; tail feathers barred with black and zig-zag bands; olive-brown beak and feet. Length, 7 ins.

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## WINTER BIRD VISITORS

There are several species of birds which do not nest in our country, but which visit us during the autumn and stay the winter upon our shores. Amongst these, almost every boy living in the country has probably noticed those two fine birds the redwing (*Turdus iliacus*) and fieldfare (*Turdus pilaris*). These two species belong to the thrush family—you have perchance noticed the likeness in build and habits—and visit us in winter after a long journey from Norway. They are mostly silent when with us, but the redwing is a fine songster in its native land, and is sometimes called the Norwegian Nightingale. Beyond this, the redwing is a beautifully plumaged bird, being rich orange-red on the flanks and under-feathers of the wings. It has a white throat, streaked with dark brown, and a conspicuous pale buff eye-stripe. Of the two species, the redwing is the least numerous; it does not flock together so much as the fieldfare. These latter birds utter a 'chack, chack,' note as they fly along, and they wander about the countryside in companies. The redwing is an insect-feeder to a great extent, but during winter will partake of berries, although it is not nearly as fond of them as is the fieldfare. The fieldfare is considered by many quite the handsomest member of its family which is found on Britain's shores; the chief colour above is slate-grey, the back chestnut-brown; throat and breast buffish-brown; centre of abdomen pure white, also axillaries; throat and breast streaked with black.

Another interesting bird visitor during winter is the brambling (*Fringilla montifringilla*). It is a very pretty little member of the finch family, and leaves its home in Norway, or some neighbouring country, during early winter to seek the more congenial climate of the British Isles. They are frequently seen with flocks of chaffinches, and roost in evergreens and other shelters with these latter birds. In the summer—when we do not see this bird in its full beauty—the brambling is black above, shot with blue, and shading off to white on the rump; chin and throat pale chestnut, rest of under parts white. In winter, after the autumn moult has taken place, the plumage is not so pleasing, most of the black above being hidden by long rusty fringes to the margins of the feathers. The brambling is very fond of beech mast, and dexterously extracts the kernels from the husks.

During winter whooper swans (*Cygnus musicus*) visit our shores, and when the weather is very hard Bewick's swan (*Cygnus bewickii*) is also found tenanting our country. The whooper is also called the whistling swan on account of its note. It is a smaller species than the mute swan, which so gracefully ornaments lakes in English parks and other sheets of water. Bewick's swan possesses a trumpet-like call, and to listen to a company of these birds migrating at night, with the noise made by the rush of many strong pairs of wings, and the peculiar trumpet-like note, is very weird and strange.

The grey plover (*Squatarola helvetica*) much resembles the golden plover (this latter nests in the British Isles, the grey species does not), and visits us during winter. Many visit us during the spring and autumn migrations, but some stay the winter.

On the mud flats near the coast various kinds of wild fowl are found during the winter. Amongst them the bean goose (*Anser segetum*) is one of the most conspicuous winter immigrants. It is a fine goose, dark brown and grey above, and brownish-grey below, and may be identified by the central portion of the bill being orange-yellow, black at the base and on the nail, and by the orange-yellow legs and feet. The pink-footed (*Anser brachyrhynchus*), white-fronted (*Anser albifrons*), and brent (*Brenta bernicla*) geese also visit our shores during winter, besides a number of other birds, such as scaup ducks (*Fuligula marila*), golden-eye ducks (*Clangula glaucion*), sanderlings (*Calidris arenaria*), turnstones (*Strepsilus interpres*), knots (*Tringa canutus*), and many other ducks, geese, and waders too numerous to mention.

I have purposely omitted to enumerate the large increase in the numbers of birds to be observed during the winter which nest in our islands, my remarks having been solely confined to those species which do not breed among us.

In concluding this chapter on some British birds, I should like to point out to every boy who reads this book the large field for observation which still exists in the bird-world, in spite of the large number of books on bird-life which have been, and are still being, published. To mention one or two points only: we do not know to any extent how long birds take to build their nests; how long it takes for the eggs to hatch, and the young to leave the nest; we cannot yet interpret the meaning of the songs, cries, and notes of wild birds, nor do we yet correctly understand the wonderful subject of migration. These and many other very interesting traits in the characters of the feathered tenants of the countryside remain to be described, and no boy need think that everything worth knowing about even British birds is known. Much remains to be accomplished; there is work for every intelligent lad, and I can promise any boy who has not yet taken an interest in birds, or other wild creatures, a rich fund of information, interest, and delight, if he will only use his eyes and ears to advantage; employ his leisure hours profitably; and cultivate and appreciate a sensible and pure hobby and the spirit of observation.

## CHAPTER VI

# SOME BRITISH REPTILES, AMPHIBIANS AND FISH

FOLLOWING the list of vertebrates as set out in the chapter on mammals, page 35, brings us, after the birds, to the—

**Reptilia (Reptiles).**

I. Lizards.
II. Snakes.

**Amphibians.**

I. Frogs and toads.
II. Newts.

And the last class in the vertebrates is the **Pisces (Fishes).**

### REPTILES

We have, therefore, first to concern ourselves about the reptiles, namely, the lizards and the snakes. As there are only three species of lizards and three species of snakes in the British Isles, our task will not be a lengthy one. For all that, the members of this class are not by any means the least interesting included in the vertebrates, and the lizards (which come first) are perhaps much better known, and lend themselves more to study than the snakes.

**The Common Lizard.**—This is the smallest of the three British lizards, and is a handsome little species. It feeds almost entirely on an insect dietary; is a good swimmer; produces its young alive, the egg hatching within its own body, and differing from the sand lizard in this respect. Hence this species is called viviparous, whilst the next species is called oviparous. These are most interesting points which the reader should not lose sight of. Three or four young ones are born—sometimes more—and these are very dark in colour, almost black. The adult lizard is greenish-brown, has black or dark brown longitudinal bands, and a bright orange-yellow belly spotted with black.

**The Sand Lizard.**—The sand lizard is a much rarer species than its last-named relative. It resorts to the plains, and may be identified from the common lizard by having teeth and smaller scales. It varies a good deal in colour; brown in various shades tinged with green, white on belly, spotted minutely with black. On the back and sides there are rows of white spots which vary in number. The eggs, which number about twelve, are deposited in the sand, where they hatch unassisted by the parents.

**The Slow Worm.**—It is a thousand pities that this entirely harmless species should have been accorded the name of slow or blind worm, for it is often mistaken for, and killed as, a snake or a worm. As a matter of fact it is neither, it having been proved to be a legless lizard! Boys who get about the countryside should remember this, and impart the information to their fellows. This species is not found in Ireland. It averages, perhaps, ten to a dozen inches in length; it is metallic red or grey on the back, whilst the belly is dirty white or darker. It has a small head and eyes, the tail has small scales, and is about as long as the body. Like the sand lizard this species hibernates, but not for any lengthened period. Snakes cast their skins—called sloughs—and, curious to relate, this lizard does also. Its food consists for the most part of snails and worms. It is, like the common lizard, viviparous. Ten to a dozen young ones are born during the summer, and it is very partial to a manure heap as a breeding-ground.

A curious habit of many lizards is that of leaving their tails behind them when handled, so as to make good their escape; this species also will sometimes do so. When taken in the hand the slow worm evinces its dislike at being handled by biting, but it cannot, by reason of its rudimentary teeth, do much (if any) harm.

**The Adder, or Viper.**—This is the only poisonous reptile we possess, but unless 'cornered' rarely does much harm. Professor Gerald Leighton—our greatest living authority on British serpents—in the course of some very entertaining reptile studies in the *Field Naturalists' Quarterly* (of which he was the able editor), has told us that he has proved the oft-disputed point as to adders taking to the water and swimming. During one of his adder-hunts Dr. Leighton observed 'an adder coiled up on a stone some feet from the banks of the river, which it must have reached by swimming.' Approaching the reptile with great caution, with camera ready for a snap-shot, Dr. Leighton got quite close to it, and was just about to release the shutter when the adder glided off into the stream. The shutter was snapped a second or two afterwards, and we can well imagine the great pleasure it must have afforded when it was found on developing the plate that the head of the reptile was plainly discernible in the water. After witnessing this act on the part of a perfectly wild snake, Dr. Leighton made experiments with living captured adders, and as a result found that they would swim without hesitation across the river, which was some thirty yards wide, and one remained in the water for forty minutes before making any effort to get on shore. On this same reptile-hunt Dr. Leighton obtained a variety known as the small red viper, which he believes to be quite distinct from the common adder, and which he proposes to call *vipera rubra*, to distinguish it from *vipera berus*, the common adder. We are told that its size, habits, and distribution are entirely different from those of the common species; and, moreover, both sexes are similarly coloured, which is not the case in the common adder. At present, however, it is impossible to state whether this new variety (or species?) breeds with the common adder, and hence the question remains a matter of opinion until further evidence is forthcoming.

It was during the course of this hunt also that Dr. Leighton encountered one of the only two adders he has ever known to attack in the open. He tells us that as a rule they will endeavour to escape, but this particular specimen was disturbed as it was sleeping on a warm bare patch amongst the heather during afternoon. It went straight at the hunter, hissing volubly. I have personally known adders to attack a person, more especially when they have young, but unless they are 'cornered' it is safe to assert that they almost invariably try to escape, and do not show fight.

Adders are especially numerous in the New Forest in Hampshire. For many years there roamed about the forest a snake-catcher, who rejoiced in the name of 'Brusher' Mills. To give

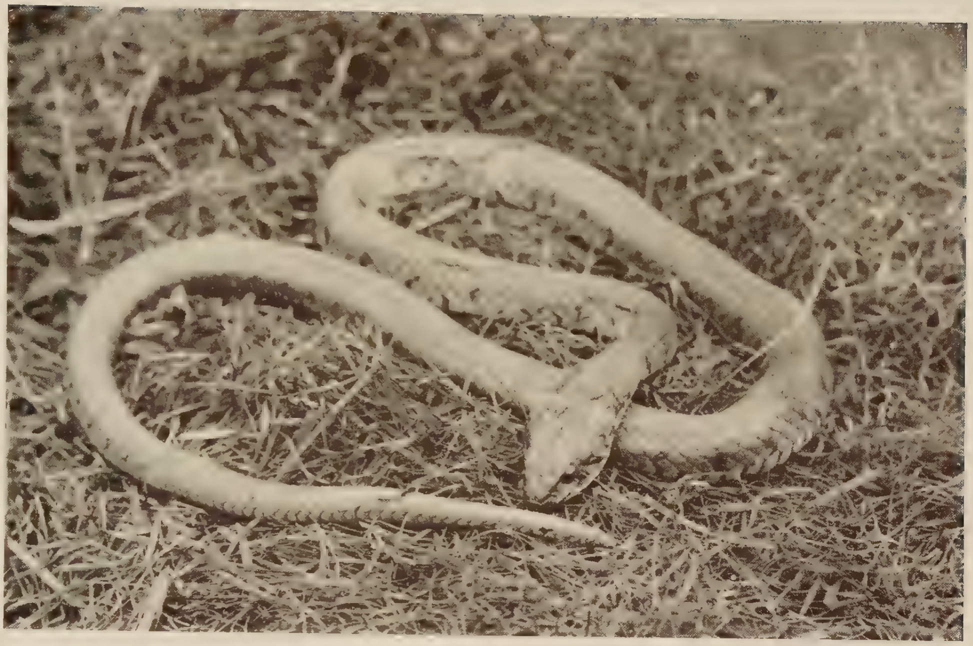
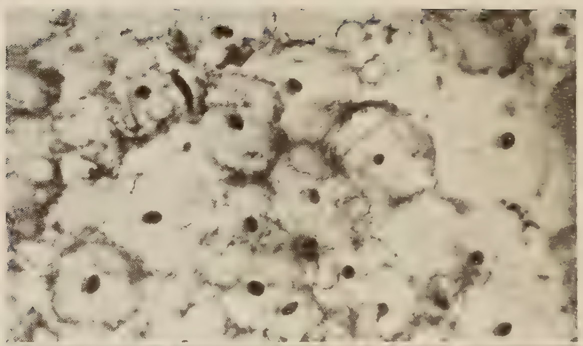
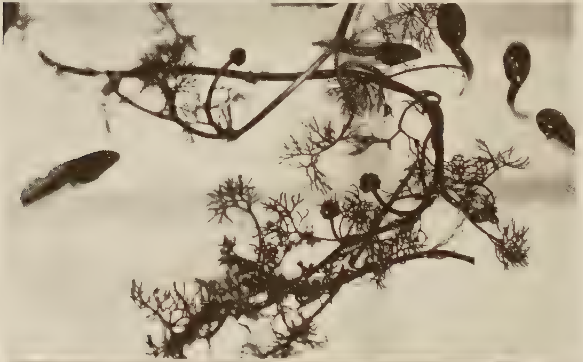


FIG. 40.—COMMON, GRASS OR RINGED SNAKE

(*see page* 179.





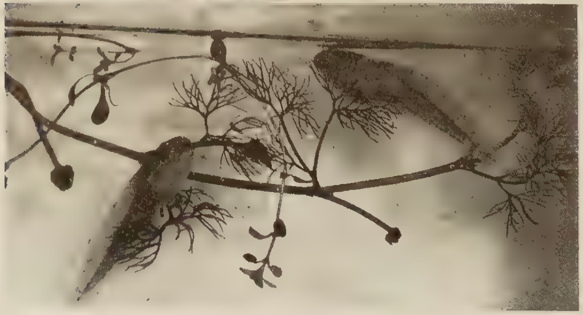


FIG. 41.—FROG SPAWN

FIGS. 42 AND 43.—TADPOLES.

[*see page* 182.

an idea of the number of snakes there found, I may state that the redoubtable 'Brusher,' during the first fourteen years of his snake-catching, caught no less than 3,186 adders!

A great many people have asserted that adders swallow their young in the time of danger. As yet, however, no thoroughly authentic information has been forthcoming, in spite of tempting rewards which have been offered. Many students of these reptiles now agree that this performance is anatomically possible, but at present the matter remains in doubt. If it is hereafter proved to be correct, it is curious to reflect that Dr. Leighton and others who have hunted so many adders in the course of their studies have never as yet witnessed the accomplishment referred to.

Personally I am decidedly of opinion that the adder does do so, as I have unimpeachable evidence from a friend of mine, who is a practical field naturalist and a gentleman who has had ample opportunity of seeing these things, indeed, spent a good deal of his time in looking for them. Let me tell the story in as few words as possible.

Mr. Horace Tuppen, late of Ripe, near Lewes, Sussex, whilst out on his farm some years ago, came across a male adder, which he promptly shot. No sooner had he done so than he observed the female eyeing him very suspiciously, as if she was preparing to attack him. All at once she opened her capacious mouth widely, and several young adders immediately sprang into it. The fatal moment had now arrived, and my friend fired. The shot took effect, and sixteen young adders at once jumped out of the parent's mouth, one by one, my friend killing each one with the butt end of his gun as they did so.

Such wholesale slaughter was, to say the least, deplorable; but coming, as this information does, from a gentleman in whom I have the most implicit trust, I cannot but think that this long-disputed act is not only possible but extremely probable. Since writing this I have received further confirmation from another eye-witness and a man on whose word I can absolutely rely.

Now, you boys who reside in the country where adders are found, here is a chance for you to keep your eyes well open and be of some service to scientific research.

The adder has a dark zig-zag line along the back, and a **V**-shaped patch of black on the crown of its head. In colour it varies very considerably, being found in many shades of brown to black. It casts its slough with regularity, and sometimes not without difficulty, rubbing against a stone or other article, until the old skin is wriggled off. It averages about 18 ins. in length, although much longer examples are often recorded. It sleeps during winter, waking up in the spring-time. The young vary in number from fourteen to forty, and these are brought forth in the perfect state. The dietary is made up of mice, lizards, small birds, eggs, and insects. Although the bite of the adder is rarely proved to have fatal results, it is policy to endeavour to avoid being bitten if one finds himself 'cornered.'

**The Common, Grass, or Ringed Snake.**—Mr. Sedgwick was fortunate enough to secure a very excellent photograph of one of these perfectly harmless reptiles, which is reproduced in Fig. 40. By looking at this photo, you will observe that the **V**-shaped patch on the head of the adder is not present in this species. You can also discern in the illustration the yellow patch on the side of the head, and some of the dark blotches on the side of the body, the latter being for the most part greenish in coloration. Not only is this our largest snake, but it is also the commonest. The average length appears to be from about 30 to 36 ins., but specimens measuring over 5 ft. have been recorded! The tail, as will be seen in the photograph, tapers off to a point almost, and it is interesting to notice, by comparison, that the tail of the adder is blunt. This snake is very partial to frogs, which are swallowed alive. It also feeds on toads—which are rarely eaten by any wild creature—as well as birds and eggs, mice and newts. I knew of a grass snake which devoured a nest full of young nightingales, the story of which, being so piteous, I withhold from publication here. It deposits its eggs—which vary in number from perhaps twenty to thirty—in a manure heap, for preference. They are best described as leathery-shelled eggs, and have been known to lie in a manure heap all through the winter, hatching out in the spring. The young of this species are very dark when first hatched, light colour only being present on the collar. It resorts to damp situations, and is very fond of the water. Mr. Charles E. Nipper, of Axbridge, sends me a note of an incident related to him by a friend of his. Mr. Nipper's friend was fly-fishing for trout one summer, and hooked and landed a common grass snake! He is a member of a certain angling association, and weighed in his catch with the fish! I have heard of swallows being hooked whilst persons have been casting their lines, and my grandfather hooked a bat during one of his fishing excursions, but this is the only instance I have heard of a snake being caught with rod and line. Dr. Leighton mentions that a prominent characteristic of this snake is 'its habit of emitting a powerful and unpleasant odour when disturbed. . . . The odour is the product of two glands placed just within the anal orifice.'

**The Smooth Snake.**—This species, the remaining British reptile on our list, is quite the

FIGS. 44 AND 45.—FROG SWIMMING. FIG. 46.—COMMON FROG.

[*see pp.* 182, 183.

rarest of the six species included. It is reddish-brown, and has a double row of black spots. It differs from the last-mentioned species in producing its young alive—being viviparous—but in a similar manner emits an unpleasant secretion. It appears to feed on lizards for the most part. Dr. Leighton remarks, in his *British Serpents*, that a great deal has yet to be learned respecting the dietary of snakes, more especially that of the young. Here is ample scope for the young reptile-student to acquire knowledge, and be of some service in recording information upon this much neglected matter.

## AMPHIBIANS

Whereas there are only six species included in the class *Reptilia*, which was last under review, the amphibians, divided up into these two orders—

I. Frogs and Toads,
II. Newts,

number but one more. In the British Isles we are poorly off indeed as regards reptiles and amphibians, the list including thirteen species only. To deal with the frogs and toads—

**The Common Frog.**—Perhaps of all the vertebrates, the common frog is one of the best known, at any rate, by casual, if not close, acquaintance. And next to the lizards and snakes, perhaps no creatures are regarded with so much repulsiveness as frogs and toads, but for what adequate reasons it is difficult to understand. Both species are absolutely harmless, and the stupid reports which are circulated as to these animals 'spitting' may be written down in the wise words of Mr. Aflalo as 'pure fiction.'

The life-history of the frog is one of the most wonderful and interesting of any British animal. Early in the spring the spawn is deposited in masses in ponds, and may be observed at that season floating on the surface. In the course of a few weeks the second stage is reached in the life-history, the young—which are called tadpoles—then being hatched. It is wonderful to reflect for a moment upon the fact that during its early life—that is, whilst a tadpole—the frog breathes by means of gills; but as the tadpole stage is left behind, the tail is gradually lost, the mouth, which is beak-like at first, loses this latter form, and, by a wonderful process of evolution, the young tadpole develops into the perfect frog, as illustrated in Figs. 41–46, and breathes by the means of lungs! Our photographs reveal the frog spawn (Fig. 41), some young tadpoles (Fig. 42), recently emerged from the jelly-like ova, and Fig. 43 shows them in a more advanced form. Notice the tail at this early stage, and also note that as the frog develops, this appendage is entirely lost. Not only whilst in the tadpole stage is this interesting amphibian an expert swimmer, for the adult frog is a splendid example to boys as to the correct manner of striking out when learning to swim, its strokes being easy and beautifully measured. Our photographer has pictured for us a frog in the water (Fig. 44), showing a frog at the base of the aquarium, and Fig. 45 portrays same in a different attitude. This latter picture nicely reveals the long hind legs, the fore-legs, and the webbed toes. Successful as Mr. Sedgwick has been in securing these four excellent frog-life photos with that ingenious home-made camera which he has told you in his own two chapters how to make and use yourself, he has been still more successful, I think, in his further study of the frog on land. Notice the capacious mouth, and the exceedingly prominent eyes. Not only can the frog see what is in front of it, but it is also able to glance sideways. It feeds on insects found in the water and on land, and the tongue, which has a viscid secretion upon it, is used to advantage in the capture of insects. I have occasionally in my wanderings come across whole armies of young frogs on their migration-march. Apparently these little creatures had only just left their watery home, and were *en masse* seeking pastures new. Not hundreds, but thousands of little frogs, not much more than a quarter of an inch long, have I met migrating in this way, and have seen a country road so densely populated by them as to make it quite impossible to walk without treading upon them! The female is the larger of the two. The colour is brownish, with or without spots.

**The Edible Frog.**—This species—the edible, or eatable frog—is rare in our country. It has been introduced, and in some parts seems to be increasing. The distinctions between this and the common species may be shortly stated thus: There are black markings and white lines on the back, the hind toes are completely webbed; it is greenish in colour. On the sides of the head are what are called 'vocal sacs,' by the aid of which the croaking is produced, and this more during the breeding season than at any other time.

**The Toad.**—Perhaps this species is regarded even with more hatred than the frog, and although I will admit its leathery, warty-like skin and clumsy build, awkward and ungainly habits, may be somewhat repulsive to those people who only view their own species (*Homo sapiens*, 'man the wise') as possessing intelligence, the stories which one hears as to harm perpetrated are quite untrue. It feeds on insects, and although it is true that as a means of defence it is able to emit a somewhat irritant secretion from the pores of its skin, it does little (if any) harm to anybody. Indeed, the frogs and toads may be justly regarded as being quite as useful in ridding the land of insects as insect-eating or insectivorous birds. Mr. Sedgwick has given us a splendid snapshot of one of these animals (see Fig. 47). The wart-like skin, prominent nose, eye, swelling over same, and limbs, are all admirably depicted in this photograph. You will notice, too, the shortness of the hind legs as compared with those of the frog. The toad catches insects by means of its tongue with great adroitness and cleverness, and this organ is furnished with a sticky substance like that of the frog. It breeds in a similar manner to its near relative, but the tadpoles are darker in colour, and it does not resort to water to the same extent. It is brown above, with black markings; white below, spotted with black. Similar to the adder, it casts its skin—or slough—and has been known not only to cast it, but to swallow it!

**The Natterjack.**—The remaining toad on our list is the natterjack, which is rarer than the last-named species. It may be identified by a light line on the centre of the back, which has resulted in the name of 'Golden Back' being accorded to it in some localities in the country. It is more active than the last mentioned, the hind toes are not webbed so much, and the hind leg is shorter. In other respects it mostly resembles the common toad, although this species is stated to feed on mice as well as insects.

The second and remaining order, the newts, need not detain us at any length. There are three species only, and the first on our list is—

**The Common or Smooth Newt.**—Newts are found on land for the most part, resorting to water only for breeding purposes. The spawn is placed amongst the leaves of aquatic plants; the young commence their life as tadpoles, like the frogs and toads. It is interesting to notice, too, that during the breeding season the male newt acquires a crest which may, or may not, be one of the attractions of courtship, much in the same manner as the sheath which envelops the beak of the puffin at nesting time attracts for him a female partner in life. The common or smooth newt is a handsome species, being green or brown in colour, much spotted; it is yellow underneath, spotted with black. The male is red under the flattened tail with lines and markings of a bluish hue, whereas the female is yellow and without the markings. The male, as stated, grows a frill or crest along the back during the breeding season, which may be plainly seen in the photograph of the largest newt in Fig. 48. The female also possesses a frill, but this is smaller. In the summer it casts its slough. Length, 3½ ins.

**The Palmated Newt.**—This is the smallest of the three British newts; it is darkly spotted on the body, and speckled with black on the head. The crest is edged with black; in the breeding season the toes of the male are webbed, and there is a curious filament on the tail. Length, 3 ins.

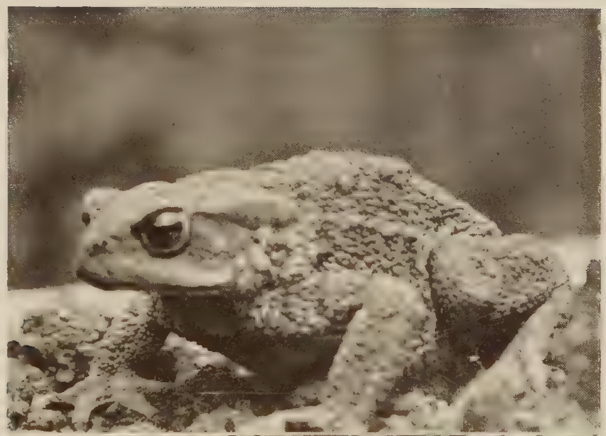
**The Great Water Newt.**—This is our largest species, being 5 ins. in length. It is black above, yellow underneath, spotted with black. The male has a prominent crest during the breeding season, and a light band is present on the tail. It may be distinguished by the warts on the skin and the pores on head and body. In its habits it resembles the two other species, and all three feed on a dietary which is made up for the most part of the tadpoles of the frog!

## PISCES (FISHES)

Of the two hundred (about) species of British fish—that is, fresh and salt water inhabitants—it is quite impossible, in the limited space at my disposal, to give a description of more than one-tenth of the number, and even then those resorting to the sea must be altogether eliminated. We, therefore, must confine our attention to a few of the commoner species of British fresh-water fish, of which there are about fifty species. Before coming to these, however, it should be stated that fish are divided up into a great many orders and sub-orders ; but fish being difficult to study—howbeit their life and habits are none the less interesting—the young reader need not be troubled here with scientific terminology or problems of classification.

Fish, as will be noted from the list of vertebrates set out in the opening pages devoted to some British mammals, is the last class included in the vertebrates. Although living entirely in the water, fishes have an inside skeleton, and breathe by means of gills which act as lungs. It is as necessary for a fish to inhale air as it is for land animals, including man, and air is chiefly made up of two indispensable gases, called oxygen and hydrogen. A certain quantity of this air is found in a natural condition in water, such as a river, lake, pond, sea, etc. As many boys will perhaps have noticed, fishes are generally seen facing up-stream, so that the water may penetrate into the mouth when opened, and thus give to the fish oxygen, a necessary and life-giving gas. This is necessary for the purpose of purifying the blood and supporting life.

The water passing into the mouth in this way is not swallowed, as might be supposed, but passes through the gills and out at the two slits at the side, called gill-covers. The gills themselves are usually red in colour. Most boys on lifting up the gill-covers have at some time or other noticed these



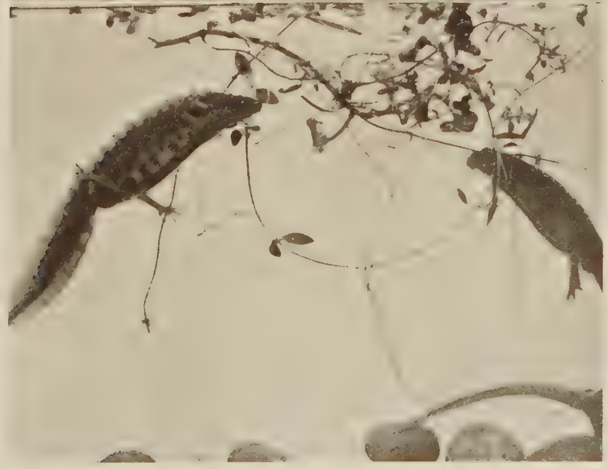


FIG. 47.—TOAD.

FIG. 48.—COMMON OR SMOOTH NEWT.

[*see pp.* 184-186.

beautiful organs—the gills—consisting as they do of fringed or feathered membranes. When the angler catches a fish and puts it on the ground or in his fish-basket it generally dies, although some species—eels, for instance—live quite a long time out of water. Why does it die? Because when taken out of its natural element—water—the gills dry up, the fish cannot take in oxygen *which is not mixed with water*, and it dies of suffocation. Fishes (as also amphibians and batrachians) are known as cold-blooded animals. A fish taken from the water is cold to the touch. Why? Because the gills only absorb a small quantity of oxygen; as a result there is not much 'oxidation' or 'combustion' in the tissues, and a small amount of heat only is generated.

Being cold-blooded the fish does not need any special protection from cold. In some species there are no scales, a thick skin replacing same; but generally speaking scales are present. These are composed of a horny substance, and may be compared to the nails on the reader's fingers and toes. They are beautifully arranged, much in the same manner as the feathers of a bird, namely, they overlap. Thus water cannot penetrate between them, and the scales being flexible, the fish is able to bend its body quite easily. Could the young reader suggest any improvement in the shape of fish? Is not the typical 'spindle-like' form of body perfect, to enable them to glide through the water with ease, elegance and rapidity?

The fish swims mostly by the aid of its tail, whilst the fins may be called the steering-gear. Human beings have four limbs, and in a corresponding manner so has a fish in its four fins, mostly present in pairs. The fins of a fish may shortly be stated to be as under—

1. Pectoral fins, on right and left sides of the breast.
2. Pelvic fins, underneath the body.
3. Dorsal fins, on the back.
4. Anal fin, underneath body near tail.
5. Caudal fin, namely, the tail.

Inside these wonderfully interesting animals is an air- or swimming-bladder, which is a most essential and useful organ. By means of it, fish are enabled to float to the surface of the water or to sink below. How does a fish rise to the surface? The answer is, air is lighter than water; when a fish wishes to proceed to the surface, the swimming-bladder is puffed out or filled with air until the body is lighter than an equal proportion of water, and this enables it to ascend. Indeed, as Mr. Aflalo points out, the air-bladder is a sort of internal gas-bag inflated with a preponderance of nitrogen. But what happens when a fish is at the surface and wishes to descend? Then, the air in the bladder is let out. By what means? By the aid of certain muscles;

and as the fish then becomes heavier than water, it is enabled to sink lower. It is most interesting to relate that some species of fish who entirely resort to the bottom of deep water do not possess a swimming-bladder; but although most species who resort to the surface do have this wonderful organ, there are some rapid surface-swimmers who do not! Here is an interesting object-lesson to reflect upon, gleaned direct from Nature's ever-open and wondrous book.

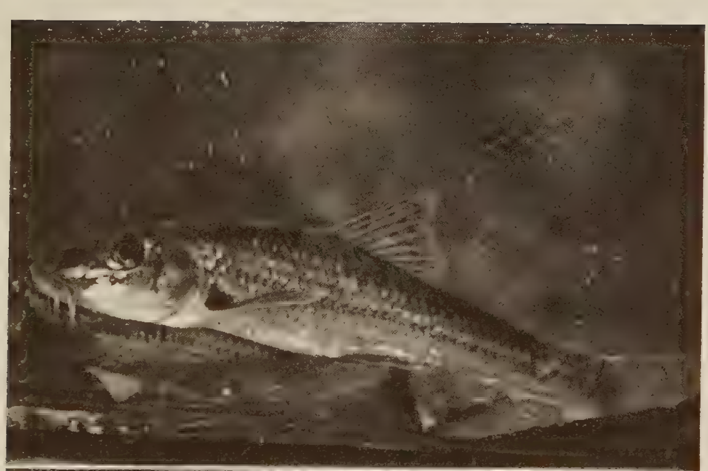
Fish lay an enormous number of eggs, for the reason that these are preyed upon by other fish, birds, mammals, etc., besides which the nature of the surroundings in which they are deposited makes it necessary for an allowance to be made for waste, etc.

I hope now that you appreciate a few points in connection with the wonderful life-history of a fish more than you have done previously, and will not in future look solely upon these interesting creatures as objects only for catching with a rod and line. Our sketch so far has had to be considerably curtailed, and is quite elementary, but I hope I have written sufficient to induce you to pursue this study further with pleasure and profit.

**The Metamorphosis of a Fish.**—Before proceeding to shortly summarize a few of the salient features of about twenty of our commonest freshwater fish, I propose to tell you exactly how a fish is hatched, and follow the same right on until it is twelve months old, or a yearling. And for this purpose we will take

**The Common Trout,** that really beautiful British fish with which almost every boy in the country is by sight acquainted.

British fish are, with very few exceptions, hatched out from eggs, or ova, called spawn. In the case of the exceptions the young are brought forth alive. A great many eggs are laid in various situations, sometimes at the bed of a stream, on the leaves of aquatic plants, etc. It is curious to notice that whilst some species of fish, like the salmon, ascend the rivers at 'spawning' time, there are other species, the eel for example, which act in an entirely different manner and descend to the sea! When the eggs are laid, the parent fish—unlike birds and mammals—take little heed of them, leaving them to be hatched by means of the warmth of the water. These eggs are much relished by various species of fish, as also by birds and reptiles. In the case of the common trout the spawn is deposited during the autumn in a small depression in sand. This serves as the 'nest,' and is made by the trout by the aid of its tail. The eggs are then covered over with gravel; there they remain during winter, being hatched in the following spring. When first laid the ova is yellowish in colour, with a prominent spot of red yolk. The egg is about



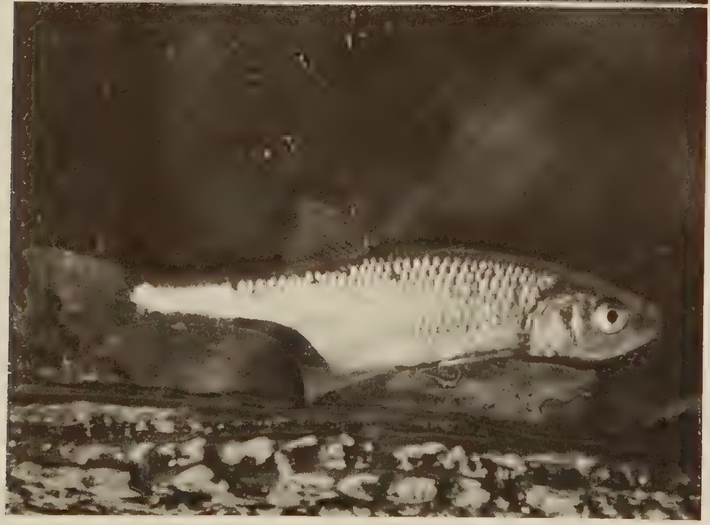


FIG. 49.—GUDGEON

FIG. 50.—ROACH.

[*see page* 200,

the size of a pea. After a month or two a considerable change may be seen; the bright yellow colour has almost entirely disappeared, being replaced by dull pinkish-yellow, the red yolk cannot be seen, but small specks can just be discerned. These are the eyes! A little later, the ova does not seem to have undergone much further change, but the eyes are more distinctly visible.

Just as the ova is hatching, the eyes become especially prominent, and the young fish can almost be seen coiled up in the egg. At last this bursts, the tail usually coming out first. This is important, as if the head is first protruded the little wanderer stands a poor chance of escape from its numerous enemies, they being on the watch for it, and if the tail is not out, the little fish cannot make good its escape from them! When it does emerge, it is a curious-looking little creature. It is then called an alevin, by which name nearly all young fishes are called at this interesting stage in their life-history. The eyes are very prominent; there is a bag under the belly, which contains the red yolk of the egg, and on this the young fish exists during the first few weeks of its life. The tail can just be observed, but the mouth has yet to develop.

After about seven or eight weeks from the date of hatching the little trout has made great progress, and looks a perfectly well-formed fish. The fins, tail, mouth, and beautifully moulded body are object-lessons in fish-life; it is about an inch in length, and now commences to search for food on its own account. At this stage the young are called fry.

When twelve months old the minute but perfect little creature last described has indeed developed into a fine fish, being quite 3 ins. in length. The head, gill-covers, fins, and tail are all beautifully perfect, and the yearling trout is well spotted on the sides of its back as well as on the large dorsal fin. The young fish—providing it secures abundant food, for trout have voracious appetites—grows very quickly. It has been known to reach an age of more than thirty years. It feeds on worms, slugs, fresh-water shrimps, and snails, as well as flies.

The adult trout is yellowish in colour, but the coloration is affected by the nature of the water inhabited. The back and upper parts, as in the yearling, are spotted with black and bright red; it is silvery-white or yellow underneath, and the fins are light brown. I have known trout to attain a weight of 9 lbs. Such, shortly stated, is the early life-history of one of the most beautiful species of fish which lives in British waters.

I will now proceed to give a short account of a few of our commoner British fresh-water fishes, and the first on our list is the voracious perch.

**The Perch.**—This fish is one of the commonest fresh-water species, and mostly goes about in companies. It may easily be identified by the very prickly, or spinous, dorsal fin, and by the black bands on the body. The general colour is bronze or green on back and sides, whitish below; red fins. Mr. Aflalo states that it is not restricted to fresh water, for he has caught large perch in the Baltic Sea.

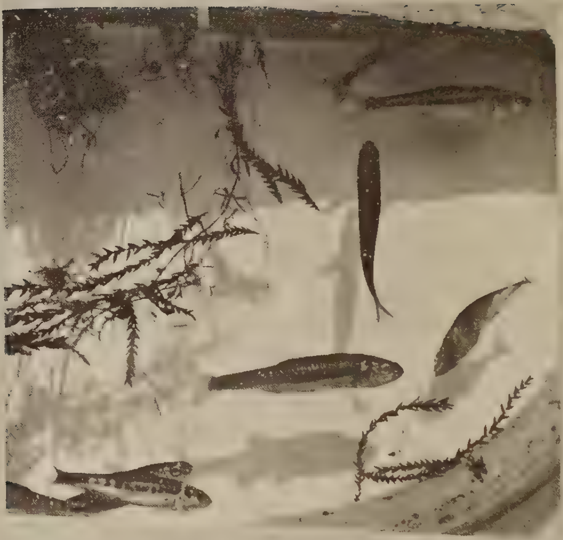
The perch always reminds me of the greenfinch amongst birds, because it is a most voracious feeder. Anglers will appreciate this statement to the full, for when once a perch-hole is found, and the fish are on the feed, sport rages fast and furious. Contrary to the experience of most writers, I have frequently caught perch after pricking and losing them, and, indeed, having lost several hooks, have eventually landed the self-same fish with the hooks in it! It feeds on small fish, young water-birds, water-voles, insects, etc. It spawns among reeds in May. It attains a weight of 7 or 8 lbs., but a perch weighing 3 or 4 lbs. is often regarded by the angler as a specimen to be stuffed and mounted in a glass case for him to gaze upon in after days as 'a thing of beauty and a joy for ever.' I have caught several over 3½ lbs. It is stated that anglers have noticed that female perch are rarely caught, and that male fish are in a great majority.

The marine form of perch is the bass, which, although chiefly found in the sea, also resorts to brackish and fresh water.

**The Pope or Ruff.**—This species might be mistaken for a small perch, but it is not nearly so well distributed. I have caught large numbers, however, in the Bridgewater Canal, in Hertfordshire. It may be identified by possessing one dorsal fin instead of two; the bands in the perch are missing, this species being spotted. It spawns early in spring, and is of somewhat inactive habits.

**The Miller's Thumb.**—What boy living in the country does not know this little fish? It resorts to clear streams for the most part, and has a habit of resting underneath stones. And what boy has not often experienced difficulty in catching with the hand this curious little fresh-water inhabitant? It darts out from underneath a stone and at once takes refuge under a neighbouring one, and it needs a keen and practised eye to follow the little creature in all its movements. It is greenish above, lighter on the sides and belly, with black vertical bands. It is a prickly fish, and it is stated that the spines on the head are often the means of causing the death of various water-birds which feed upon it. The dietary is mostly made up of larvæ.

**The Common or Three-Spined Stickleback.**—This is our commonest stickleback, and is known to every British boy. It is grey and golden in



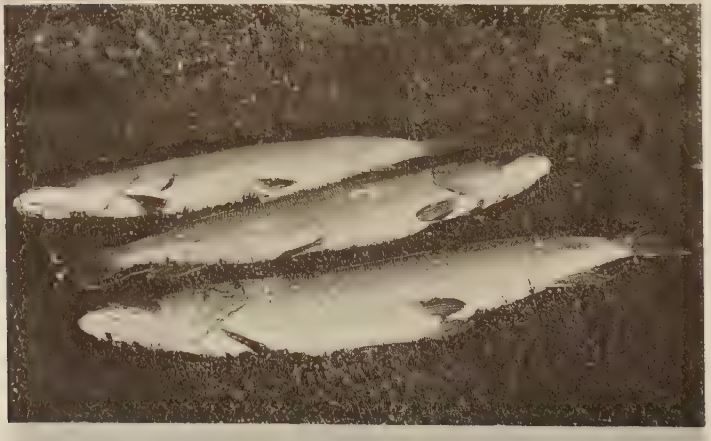


FIG. 51.—MINNOWS.

FIG. 52.—PIKE.

[*see pp.* 202, 205.

colour, has three or four spines in the dorsal fin, and in place of scales has bony plates. Instead of depositing eggs upon the bare mud or gravel, like the trout already described, sticklebacks cleverly construct a nest in a similar manner to birds. In the spring the male puts on his best attire, having patches of red on the body; and what British boy has not filled himself with pride when he has caught a 'soldier' to put in his aquarium? Remember in future that these 'soldiers' are the males. He is a 'soldier' in action, as well as appearance, for he jealously guards—sentinel-like—his nest until the young are safely got away from the family nursery!

**The Ten-Spined Stickleback.**—Rarer than the last named, the ten-spined species resorts to salt as well as fresh water. The bony plates are not present, and the general colour is greenish-brown, spotted with black; silvery on belly and sides. The male in the breeding season, unlike his near relative the common stickleback, assumes a dress of mourning, turning quite black!

**The Eel.**—The common eel of our fresh waters, particularly where there are muddy bottoms, is really a beautiful species when closely examined. The female is larger than the male, and I once caught two within a few minutes which both measured over 3 ft. in length! These were females, the male measuring barely 20 ins. It is green or brown above, yellow or white underneath. Eels go to the sea for the purpose of spawning, and it is stated that after doing so they die, as the parent fish have not been observed coming back up the rivers, but only the young, called elvers. These latter, my friend, Mr. Barr, late of Beith, Ayrshire, tells me, climb up the sides of the steep burns in Scotland, and have been known to cross fields of damp grass during their migrations.

The nesting habits of eels are extremely interesting; some build nests, in which the eggs are deposited, other species actually carry their eggs in the *mouth* until hatched. The female of another species carries the eggs embedded in the skin, which at the breeding season becomes soft and spongy, and the eggs are pressed into the skin by the eel lying on them.

The common eel is very tenacious, and will live for a length of time out of water. I have even known eels caught overnight to be very much alive the next day when being prepared for the table. Not only will they live out of water for a long time, but eels which have become frozen have actually been thawed back to life. I have known eels to attain a weight of 6 lbs.

**The Carp.**—This is a fine old fish, and was introduced into this country over two hundred years ago. My experience leads me to the conclusion that it is found in lakes and ponds more than in rivers; but in small ponds where the food supply is not very adequate the fish seems to grow exceedingly slow. The same remark applies to the tench. In other lakes, where there is an abundant food-supply, I know of several fish which have turned the scale at 6 lbs. and 7 lbs., whilst two particular specimens, male and female, which are found in a certain lake in Hertfordshire, and have been netted on several occasions for the purpose of weighing, are stated to weigh over 20 lbs. each. I have seen these two fish many times. A friend informs me he has seen a carp weighing 22½ lbs. In colour, it is between green and bronze, darkish on the upper parts. The fins are reflected with yellow and violet. On either side of the jaw there are two barbels, four in all, the lower being the longest. It is a vegetarian in diet, but will also feed on larvæ. It has large scales; breeds during summer, and as many as 750,000 eggs have been taken from a specimen turning the scale at 10 lbs. These eggs are small, and green in colour.

**The Crucian Carp.**—I have only space to mention that this species is found in British fresh waters, and that it does not exceed much more than 1½ lbs. in weight. It does not possess barbels on the jaws; is greenish in colour above, bronze on sides. The golden carp, more popularly known as the 'goldfish,' is found in some ponds and other waters in this country. They were introduced from China and Japan. The carp family contains many species of fresh-water fish which we cannot pass by, and the next is

**The Barbel.**—This species is not found in either Scotland or Ireland, and mostly inhabits streams in the eastern counties of England. There are four prominent barbels on the jaw; it has a long and fleshy snout, a thick upper lip, and in colour is mostly green above and white below. It is a vegetable feeder, but also partakes of small fishes, etc. It attains a weight of 15 lbs., and I know of a specimen which turned the scale at that weight.

**The Gudgeon.**—This well-known little fish, as most boys know, does not grow to any size, and a specimen of $\frac{1}{4}$ lb. may be regarded as a prize indeed. It is mostly greyish in colour, with dark blotches above. One barbel is present on each side of the jaw (which may be seen in the photograph, Fig. 49), not two on each side, as in the carp and the barbel. It loves running streams, but also resorts to ponds where still water is found. It keeps much to the bottom, and fishermen have to let their baits just skim the bed of the stream, or drag along it, to place their alluring baits (brand-worms gudgeon dearly love) before this fish; but it seems very fastidious in its taste!

**The Roach.**—Mr. Sedgwick has given us a clear picture of one of these fish. Fish-photography has not yet developed to any extent, but the photograph (see Fig. 50) illustrates what can be accomplished even with a home-made camera. This is a very common British fresh-water fish, but is not found in Ireland. A roach in good condition is indeed a fine fish, being dark blue or green above, sides lighter, silver below; lower fins red. It attains about 3 lbs. in weight, but a fish half that size may be regarded as a good specimen, although I have caught several weighing as much as 2 lbs. in private waters, and have seen one which turned the scale at 3 lbs. 6 ozs.! It mostly feeds on insects and molluscs.

**The Rudd.**—This is a most handsome species, and I have caught them in Hertfordshire weighing over 3 lbs. A fish of that size may, however, be looked upon as the limit weight. It is somewhat similar to the roach in appearance, but is more bronze-coloured; the dorsal fin is closer to the tail, the body is much deeper, and the fins are more reddish in colour. Beyond this, an important and distinguishing feature is the upper lip, which is horny and rigid. That of the roach is not. Insects mostly constitute the dietary. It greedily takes a lobworm and dry bread. I have caught all my rudd with these baits. *In one day*, my father and I caught thirteen dozen rudd at a certain favourite spot in Bedfordshire.

**The Chub.**—This fish is regarded by the angler as a wary species, and affords much sport when well hooked, being a most difficult fish to land. It has a wide, pinkish-coloured head; the general colour is a dark green back, white below. A chub of 4 lbs. or 5 lbs. is a good fish, but it has been recorded up to 7 lbs. Its food consists of small fishes, frogs, water-voles, and, it is stated, crayfish. They are very fond of boiled graves.

**The Dace.**—Whereas I have caught roach equally often in streams as well as ponds, I have noticed that the dace has mostly fallen to my rod, or rather the hook at the end of the line, when I have been fishing in a running stream. It does not attain a great weight, and a specimen weighing from ¾ lb. to 1 lb. is a good fish; but I knew of one which weighed 1 lb. 4 ozs. It is a long fish, silvery-blue in colour, and has no red, or very little, on the fins. It feeds on vegetable matter and insects, and spawns in May or June.

**The Minnow.**—This very beautiful little fish is mostly to be observed in shoals or companies, and when looked at in clear running water presents a very attractive appearance. It is dark green in colour, with patches of black; the breast fins have a reddish tinge. It mostly measures 3 or 4 ins. in length, though specimens of 7 ins. have been recorded.

**The Tench.**—This fish loves the mud, has very small scales, and is slimy to the touch. I have found it chiefly in old lakes and ponds which have a muddy bottom, and near St. Albans recently a gentleman of my acquaintance caught twenty-seven fish before breakfast, weighing 75 lbs. I know of a catch of tench and bream, caught alternately, in the course of two hours after a storm, weighing over 1 cwt. I caught two within five minutes, a few years ago, which weighed 3½ lbs. each. I have known it attain a weight of 4¼ lbs. It has small barbels at corner of mouth, the dorsal fin does not possess spines, and the tail is flattish in shape, not forked. The tench is darkish green in colour, whitish below. It will live for quite a long time out of water, like the eel, and feeds on insects, as well as vegetable matter, and even mud!

**The Bream.**—This fish is very plentiful in many parts of our country, and on the Norfolk broads I have seen whole boat loads landed by a few rods. It affords little sport, however, as it is not a game fighter by any means. When fishing with a float, and a bream is hooked, the float falls flat on the surface of the water, and does not disappear underneath, as with most fresh-water fish. This is accounted for by the fact that when the bream finds itself hooked it rises to the surface, the line between the hook and the float is temporarily released, and thus the float, having nothing to balance it, falls over. When the float falls you may be certain the fish is hooked. They grow to a large size, specimens weighing 7 lbs. or more being fairly common. It is a deep, but not lengthy, fish, of a silvery colour, with a red tinge on the fins. In addition to being a poor game fish, it is not much relished for the table.

The bream-flat or white bream is a much smaller species than the foregoing, has much more red on body and fins, and is decidedly rarer than its last-mentioned relative.

**The Bleak.**—This little fish rarely exceeds 7 ins. in length. It is common in many streams in England, but is missing in Scotland and Ireland. It has a blue back and sides, silver underneath.

**The Loach.**—The loach may be distinguished by having six barbels on the top jaw. It does not exceed 4 ins. in length, is dark green on back, yellow on sides, grey underneath, with dark brown spots and streaks. Like the miller's thumb, it lurks under stones, but whereas the latter species lives for quite a long time out of water, the loach dies very quickly after removal. It spawns early, March and April being the breeding season. It is very common, and lives on insects, worms, spawn, and sometimes aquatic plants.

**The Salmon.**—We must not omit to accord a place to this very beautiful fish, although our description of it must be concise. There are several rivers in our country famous for salmon ;

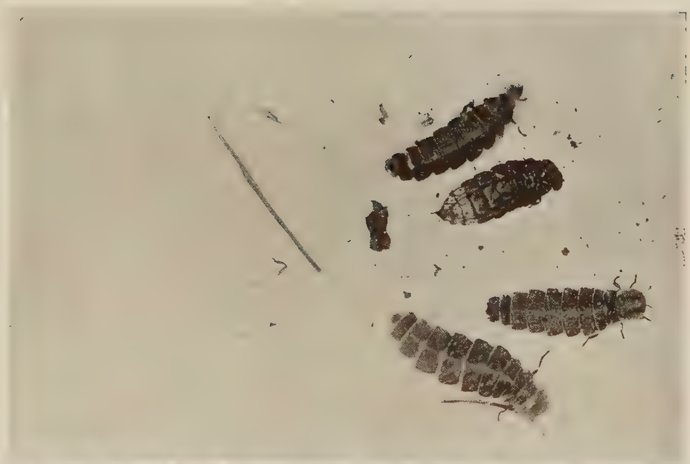


FIG. 53.—GLOW-WORMS (FEMALES).
FIG. 54.—THE GLOW-WORMS' LIGHT.

[*see page* 215

to mention only a few, the Tay, Shannon, Severn, Stour, and Avon. It attains a weight of 60 lbs., but 20 to 40 lbs. is a more common weight. It ascends our rivers from the sea for the purpose of spawning, the eggs being deposited on a gravel heap in the water. It is steel-blue in colour, but when it has been in fresh water some time becomes spotted with reddish, and the blue is not of so brilliant a description.

The trout follows the salmon, but of the former species I have already treated in the life-history sketch on pages 192 to 194.

**The Grayling.**—Fond of clear running water, this species has many rays on the first dorsal fin, is pale brown in colour, silvery underneath, spotted with black on head and body, and light on fins, the latter having red bands during the spawning season. It attains a weight of about 4 lbs., is solitary in its habits, but a rapid swimmer. There are famous grayling-rivers in the same way as salmon-rivers, and amongst these may be enumerated the Wye, Severn, Teme, Trent, and Yorkshire Ouse.

**The Pike.**—This well-known species, although the last which I am able to include here, is not by any stretch of the imagination the least interesting. It has been not inaptly called the 'fresh-water shark,' and instances of its shark-like habits might be told at great length. It seems to thrive wherever there is fresh water, and grows to a great weight.

It has been recorded up to 60 lbs. I have seen one 38 lbs. and several over 20 lbs. It is a handsome fish. I have one of 13 lbs. weight before me as I write, the handsomest-marked specimen I ever saw, which fell to my own rod a few years ago. It is a mixture of green and dark brown above, lighter on sides, white below, beautifully marked all over with yellow spots and bands. Its large jaw and conspicuous teeth, as well as the dorsal fin, being very near the tail (the latter is well-forked), are characteristic features. It is a most voracious feeder, and pages might be devoted to this alone. It will prey upon members of its own and other species (pike under about 4 lbs. weight are called 'jack'), and will also seize frogs, water-voles, and water-fowl. Mr. Sedgwick has supplied us with an illustration of three fish which were caught in the river Mole at Leatherhead.

The instances on record of the ravenous and cannibalistic character of the pike are many, and although without doubt many of these stories are very highly polished, I can vouch for the authenticity of the following incident: A friend of mine, a professional animal-stuffer, discovered a very large pike, which must have weighed between 20 and 30 lbs., in a small but deep pool of water, into which the fish had become stranded owing to the drought, the bed of the river being merely at that time a succession of small deep pools. This monster was observed swimming about with another pike in its mouth weighing at least 7 or 8 lbs., and although my friend almost dragged the large fish out of the pool by means of a hooked stick, it refused to loose its hold of the other pike. After vainly endeavouring to land the fish in this manner, my friend quietly pulled it to the surface of the pool, and dealt it a by no means gentle blow on the head, whereupon the monster made a dart and slid over the dry bed of the river into the much larger pool beyond, and thence on into the river near the mill-head, where the water was continuous. Thus the prize was lost. The extraordinary part of this story is that the pike did not, during all these manœuvres, release its hold of the fish it had in its mouth. A few days after this occurrence the miller asked my friend whether he would believe him if he said that he had seen a pike at the mill-head which must have turned the scale at considerably over 20 lbs.!

I close with an account sent to me recently by an esteemed correspondent as to a fishing excursion in Somersetshire (on which angling bout, by the way, two rods were jointly responsible for nearly 1 cwt. of fish). My correspondent says that he was very much interested in a pike which rose to the surface of the water after the swallows, as they dipped along the pool in their graceful and fairy-like flight! I have known the pike to do many things; to seize ducks, moorhens, rats, fishing floats, etc., but I have never previously heard of the wary and cunning monsters deliberately snatching at birds flying across the surface of the water.

## CHAPTER VII

# SOME BRITISH BUTTERFLIES, MOTHS, OTHER INSECTS, ETC

THIS chapter on Insects, etcetera, must perforce come within the statute of limitations, for the reason that it is quite impossible in one short chapter to deal in any way exhaustively with the whole of the inhabitants of the British insect-world, to say nothing of the etcetera. The same remarks apply to Chapter VIII, devoted to wild flowers and trees. As a matter of fact these two chapters, VII and VIII, are really Nature-photograph chapters rather than natural history; and this being so, it will be my aim simply to write up short notes on the subjects Mr. Sedgwick has so admirably depicted for us. When it is stated that there are nearly one quarter of a million species of insects known to science, the task of writing up a complete history of even British insects will be seen to be impossible here. Some insects are so minute that 4000 of them are only equal to a grain of sand; with these we cannot possibly concern ourselves. In Great Britain alone we have between 3000 and 4000 species of beetles, and in the world there are more than 700 species of earthworms! These latter are not insects, but belong to what are called *Vermes*. Before treating of the subjects illustrated, it will be useful for the reader to know how insects are divided into orders, and what an insect is. Insects, then, are usually divided into nine orders, thus—

1. Beetles.
2. Grasshoppers and crickets.
3. Dragon flies, etc.
4. Bees, wasps, ants, etc.
5. Butterflies and moths.
6. Plant lice, etc.
7. Flies, gnats, midges, etc.
8. Fleas.
9. Lice, etc.

Now, what constitutes an insect?

For an answer in simple, understandable language I direct your attention to the following excellent extract from the handbook written by Mr. Walford Gardiner, which accompanies the wonderful 'A. L.' Natural History Cabinets.[1] To these marvellous life-histories of insects, frogs, fish, etc., I specially direct your attention, for they are most interesting, useful, and of great educational value. Mr. Gardiner writes :—

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[1] Messrs. E. J. Arnold and Son, Ltd., Educational Publishers.

'All insects have jointed bodies and limbs, but no backbone. Their outer covering is a kind of horny skin called '*chi'-tin,*'[1] and this takes the place both of a skeleton and a skin, for it forms a protection to the interior organs, and also a support to them.

'A true insect has all the three parts—a *cap'-ut* or *head*, a *tho'-rax* or *chest*, and an *ab-do'-men* or *belly*—distinct from one another, as if the body were *cut* (or divided) into these three parts. These divisions usually consist of a number of rings ; one ring generally forming the head, three the thorax, and from nine to sixteen the abdomen.

'A perfect insect has usually three pairs of legs, and these are all jointed on to the thorax, one pair to each ring. The feet of some insects have claws, and some have a kind of pad by which they can walk with the back downwards, as the house-fly. The feet of others are adapted for digging (especially several kinds of beetles, as the scavenger-beetle), and others for swimming (as the water-beetle).

'Usually an insect has two pairs of wings, but one pair may be wanting ; these are also attached to the thorax above the legs. All insects breathe by means of air tubes, called *trach-e'-æ,*[2] which open along the sides of the abdomen by little mouths, called *spi'-ra-cles.*[1] These tubes spread from the sides of the abdomen all over the interior of the body. Insects have no lungs.

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[1] Greek *chi'-ton* = a tunic or outer dress. (Pronounce *ch* as *k*).

[2] Latin, *tra-che'-a*, plural *trac-he'-æ* = the windpipe, from Greek

'All insects have two very delicate organs of touch, growing out of the head, called, *an-ten'-næ*[2] or *feelers,* which are very full of joints and nerves; these are not legs. It is thought by some learned men that the antennæ contain the organs of hearing, smell, and touch. The antennæ of different insects have many and varied forms.

'As insects feed on various kinds of food, some living on animal and others on vegetable substances, while others suck juices, there are great differences in the shape of their mouths. In some the mouth is formed for gnawing (as beetles and cockroaches), or for cutting and tearing (as the paper-making wasps), and some only for sucking (as butterflies, moths, and bees).

'Insects which live by sucking, take in their food through a kind of tube, called a *pro-bos'-cis*[3] or *trunk,* which runs out from the lower lip. It varies

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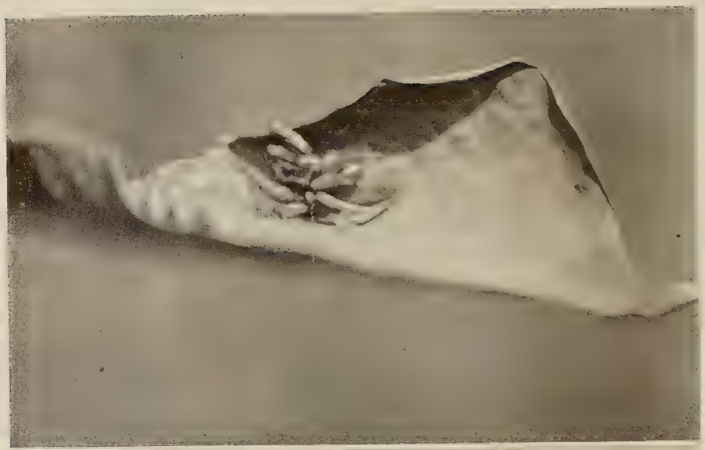
*trachys* = rough. The trachea is in Greek properly *tracheia artēria* = the 'rough artery,' because of the rings of gristle which strengthen it.

[1] *Spī'-ra-cle,* Latin *spi-rac'-u-lum* = an air hole, from *spī-'rā'-re* = to breathe. They are often called *stig'-ma-ta,* plural of Latin *stig'-ma* = a mark, as a pin-prick; these little mouths are very small indeed.

[2] Latin, *an-ten'-na,* plural *an-ten-næ* = a horn or feeler.

[3] *Pro-bos'-cis,* from Greek *pro-bos'-kis* = a front feeder; a trunk.



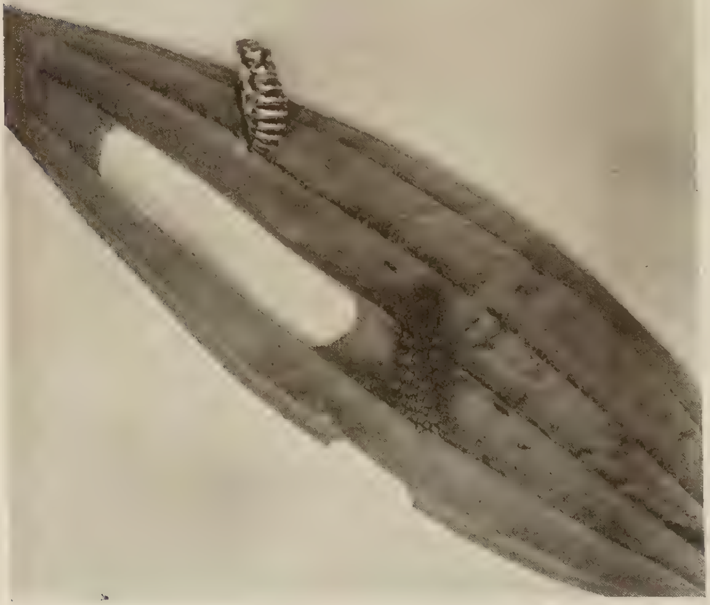


FIG. 55.—A DORMANT SPIDER IN WINTER.

FIG. 56.—LARVA AND PUPA OF HEATH FRITILLARY BUTTERFLY.

[*see page* 219.

much in length and shape in different insects. The proboscis is not really a tongue.

'Most insects have two large eyes. These are usually compound, *i.e.*, they consist of a great number of small ones grouped together on the side of the head; there are also often three or more simple eyes between them. The compound eyes of the common fly are each composed of about 4,000 simple ones.

'Most insects, such as butterflies, moths, beetles, flies, bees, wasps, hornets, and ants, are produced from eggs. Many insects take no care of their eggs, but leave them to be hatched by the warmth of the air, etc., but bees, ants, and many others rear their young with great care. The eggs of most insects pass through several changes before they become complete insects; these changes are called *met-a-mor′-pho-se.*[1] This metamorphosis properly consists of four stages—the egg, the larva or grub, next the pupa or chrysalis, and finally the imago or perfect insect. All the insects mentioned above, and many others, undergo these changes from the egg to the winged insect; but others, such as grasshoppers, crickets, dragon-flies, etc., never have the worm-like form, and do not shut themselves up in cocoons.

'Insects inhabit the earth, the air, and the water in all parts of the world, and are very important creatures. It is probable that they exceed in number all other living creatures taken together. The largest varieties live in very hot countries.

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[1] *Met-a-mor′-pho-sis*, a Greek word meaning 'change of form.'

'They provide food for one another and for a number of very small animals and birds, and several of them are useful in our daily life; such as the cochineal (a kind of bug), which is used in making red ink, and gives us the beautiful colours carmine and crimson lake (the dried bodies of the female being used for these purposes); the honey bee, which produces honey and wax; and the silk-worm, from the cocoon of which silk is obtained. But, above all, many insects assist in fertilizing flowers, and so cause a crop of seeds and fruits.'

To those who would pursue the study of entomology further, I commend—together with systematic work in the fields—the *Natural History Specimens*, etc., published by Messrs. Arnold and Son, Ltd., Leeds, and in doing this I write from an educational standpoint.

I propose now to vary the mode of insertion of the following subjects, so as to give variety. The reader can easily follow the class to which they belong by referring to the table of orders set out at the beginning of this chapter.

**The Glow-Worm.**—This really interesting,

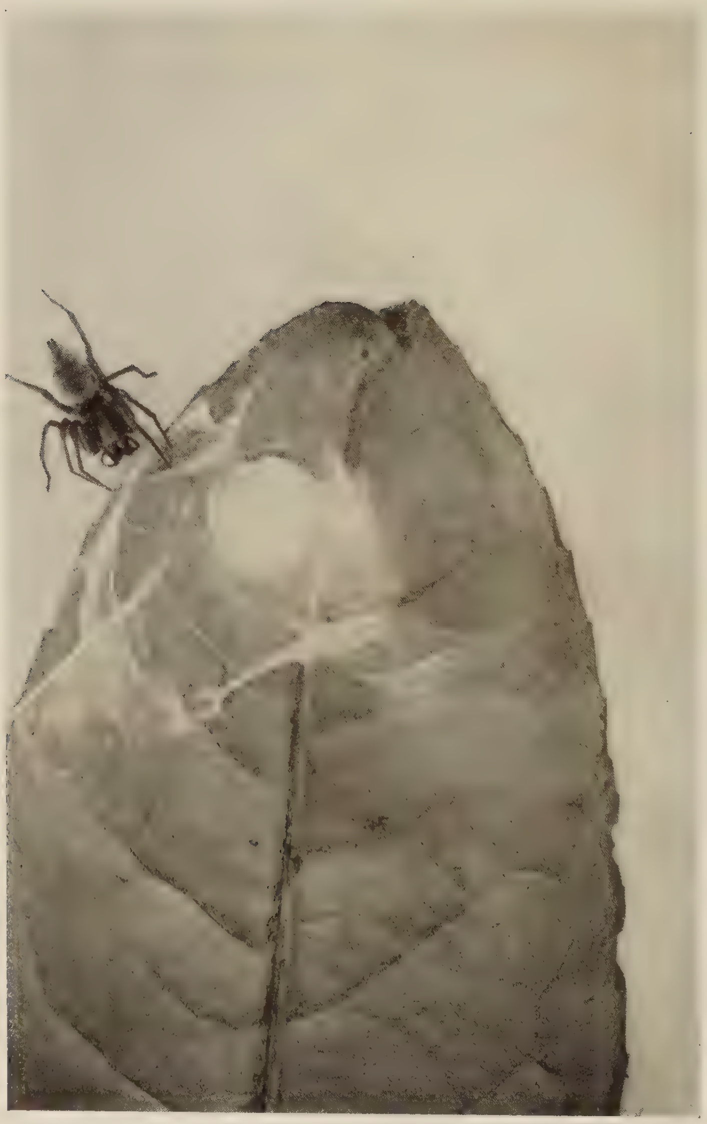


FIG 57.—GARDEN SPIDER AND NEST.

[*see page* 218.

insect is not, as its English name indicates, a worm, but is really a beetle. The photograph with which Mr. Sedgwick has supplied us shows four females, from which the reader will gain a good idea of the general appearance of this remarkable insect. It is about half an inch in length, has a soft body, and is dull black in colour. The male, however, differs in appearance from the female, having wings and wing-covers, the female being incapable of flight. The most remarkable fact in connection with the glow-worm is the bright light which the female gives off. I have seen whole hedge-bottoms lit up by this curious light on a warm summer's evening. It is pale-green in colour, and, curious to relate, the insect possesses the power of extinguishing or kindling the radiance it bears! This light is stated to be a signal to the flying male as to the whereabouts of his mate, glow-worms being night-insects. Sometimes, however, the male bears two luminous spots. These are much fainter than in the female. This light is often referred to by the poets, and among the many beautiful lines which have been written, I always appreciate the following reference which Shelley makes to it in his 'Ode to the Skylark'—

> 'Like a glow-worm golden in a dell of dew,
> Scattering unbeholden its ærial hue
> Among the flowers and grass which screen it from the view.'

Some time ago now I happened to be along the countryside late at night, and the whole hedgerow in one particular spot was lit up by the curious luminous light to which I have referred. I captured one of the female insects with little difficulty, and transferred it to a matchbox. Reaching home tired after a hard day's rambling, I took the matchbox into my bedroom, making sure before I retired for the night that the glow-worm had not escaped. The insect was quite safe. In the morning, however, it had made good its escape. A careful search failed to find the little roamer. The next evening my wife chanced to be in the garden after dark, and was there attracted by the light of what was undoubtedly the glow-worm I had captured the previous day! My bedroom being in the front of the house and the garden in the rear, the insect had had to travel a considerable distance. It has often puzzled me whether it made its way to ground *viâ* the window and either crawled or dropped to the ground, or whether it adopted the more orthodox manner of descending *viâ* the staircase!

The larvæ do not reach the perfect state until they are twelve months old. They mostly feed upon snails.

**Glow-Worms' Light.**—Writing of the curious photograph reproduced here as Fig. 54, Mr. Sedgwick says:—

'This photograph was taken by the glow-worms themselves. All that I had to do was to place them on a sensitive plate in my dark room, and let them walk about on it themselves. Their light recorded itself on the plate as they moved, and this picture is the result.

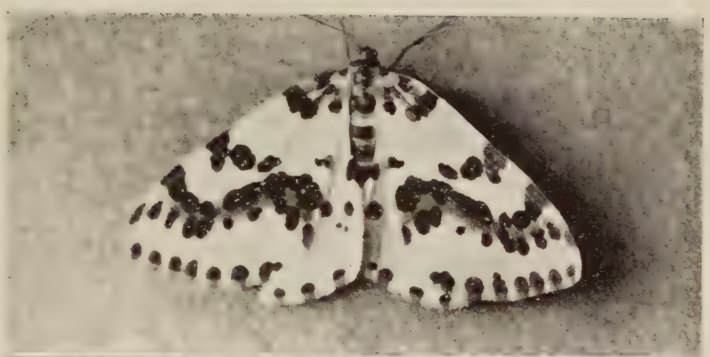
'The illustration shows in some cases the three large "lamps" and the two smaller ones, carried by these insects.

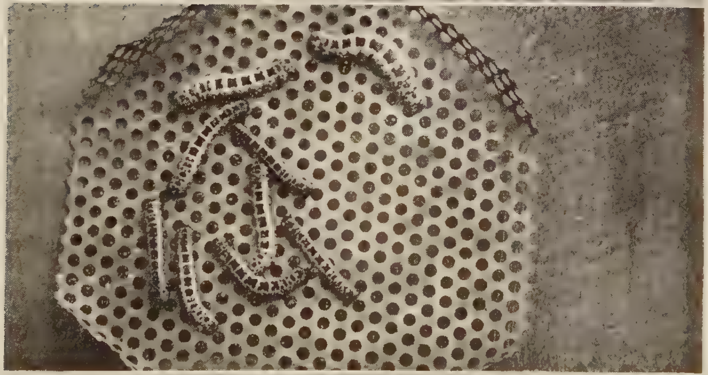
'In the picture of the glow-worms themselves, note that one of them is lying on her back, shamming to be dead. It is a point worth remembering that many insects escape their enemies by this artful resort.'

**The Peacock Butterfly.**—This very handsome and common species is known to almost every boy living in the country. The larva is spiny; it is velvety-black in colour, minutely dotted with white. The pupa varies in colour from brownish to bright yellow, and is profusely sprinkled with purplish-brown dots. The eggs are deposited on the common nettle in April and May; they hatch off in about fourteen days.

The imago (the perfect butterfly) is distinguished by the scarlet on the fore-wings, browner near the hind-margin. The hind-wings are scarlet only in the centre; the rest brown. On each wing is an eye-spot from which this butterfly derives its name, and on the margin of the fore-wings there are two black patches which can best be described as half-crescents. There are about seventy species of British butterflies, but several of these are very rare.

**The Garden Spider.**—A whole volume might be devoted to the inhabitants of spider-land. The pity of it is that our space is so limited and that so much ignorance still exists—both in country and town—as to the spider's place in the economy of Nature. There are nearly 550 species known to science; and these, with the exception of eight, all have eight eyes, the remaining eight having six only. The spider is unable to eat, as its jaws are employed in holding its prey, and its means of sustenance is carried on by suction. The reader will probably be surprised to learn that the spider's ears are in its legs! As regards the garden spider, this is really a most beautiful insect, being reddish-brown with a cross of white spots on the back. Our first spider-photograph illustrates one jealously guarding its nest and eggs to be seen on a leaf. When the young spiders are hatched—and I have counted over three hundred in one mass—they are most interesting little creatures, being golden in colour with a spot of black. As they hang suspended from a web and then adroitly climb up same like so many acrobats, they are most captivating to watch, looking just like a living necklet of small yellow and black beads. When disturbed thus, the sagacious little creatures all crowd together,





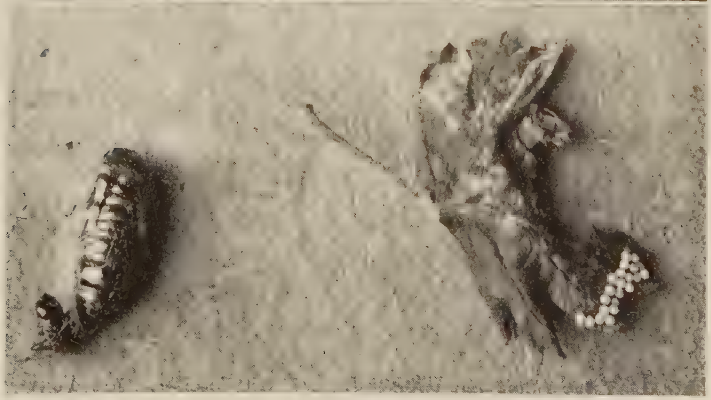


FIG. 58.—MAGPIE MOTH.

FIG. 59.—LARVÆ OF MAGPIE MOTH ON PERFORATED METAL.

FIG. 60.—EGGS AND PUPA OF MAGPIE MOTH.

[*see pp* 219, 220.

evidently being strong believers in the fact that 'union is strength.'

The spider's web, the wonderful and delicate construction of it, and themanner in which spiders act as aeronauts, has doubtless been noticed with interest and wonder by every country lad. During winter, the garden spider is dormant for the most part, and Fig. 55 reveals one in this condition taken at the winter season. Spiders belong to the order Arachnida, and differ from insects by the absence of a distinct head and feelers. The spider, therefore, is not an insect, but comes under the heading of "etcetera."

**Mimicry in Nature.**—Many instances might be given of mimicry or protective-coloration in Nature, the means adopted by various kinds of wild creatures to protect themselves from enemies. Space forbids more than two illustrations being given here. Our first photograph (Fig. 59) shows nine larvæ or caterpillars of the magpie moth. These are white, with black transverse spots on the back, and an orange-yellow stripe on the sides, with black spots above and below. It will be observed on studying this photograph how the cut-up body of the caterpillar protects it on the piece of metal which it has selected as a resting-place. Looked at not a great distance away, these larvæ would scarcely be seen. Our second illustration of protective-coloration (Fig. 61) is afforded by

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**The Magpie Moth.**—Coming immediately after the larvæ of this moth figured in our short mimicry-paragraph on page 219, it is interesting to notice the illustration of the eggs, pupa and perfect moth of this species. With the larvæ added, we have here (Figs. 58–60) a pictorial representation of the four stages in a butterfly's or moth's life; first, the egg, second the larva, third the pupa, fourth the perfect insect; an interesting life-study indeed. The larva has already been described, and it only remains for me to state that it feeds on gooseberry, sloe, currant, etc., and that the moth has white wings, with transverse rows of large black spots partly running into one another, and between which are two orange bands, one near the base and the other beyond the middle; the hind-wings are also white, with a row of black spots on the hind margin and across the middle; there are also one or more solitary spots closer to the base but more of an orange colour.

**The Edible Snail.**—The 'etcetera' allows us to include this interesting species in this chapter. This is not the common garden snail, but the edible

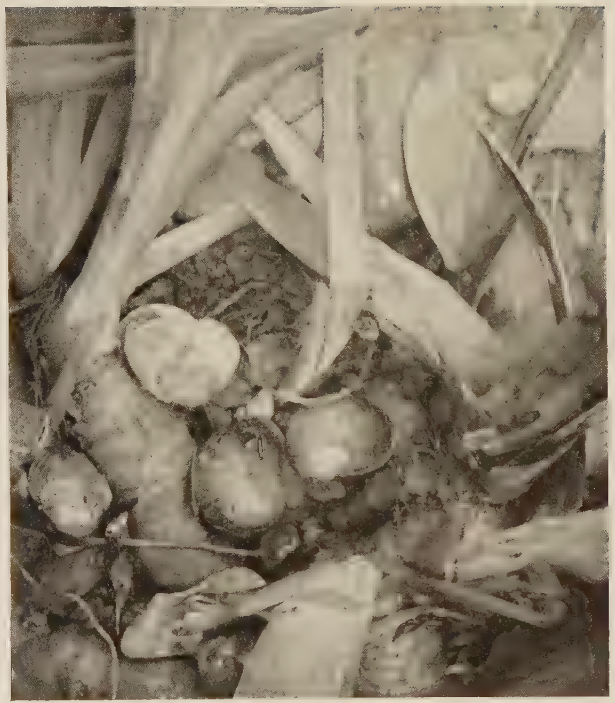


FIG. 61.—MIMICRY IN NATURE, SNAILS HIDING AMONG IRIS.

[*see page* 219.

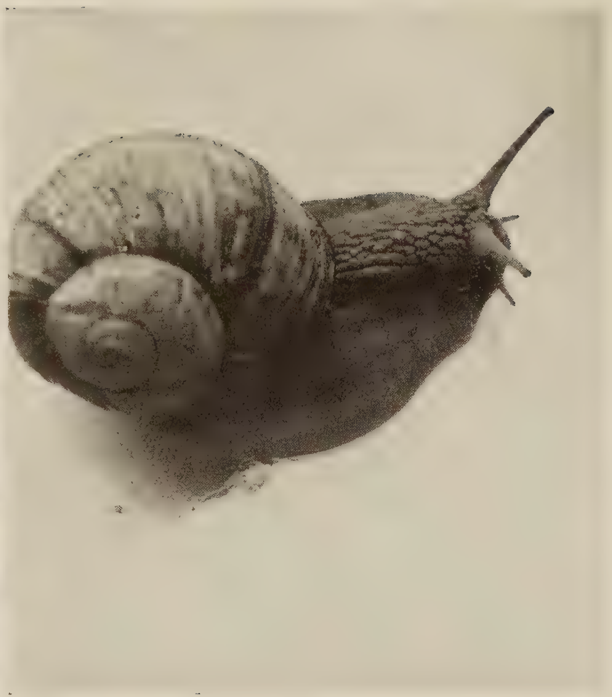


FIG. 62.—EDIBLE SNAIL.

[*see page* 220.

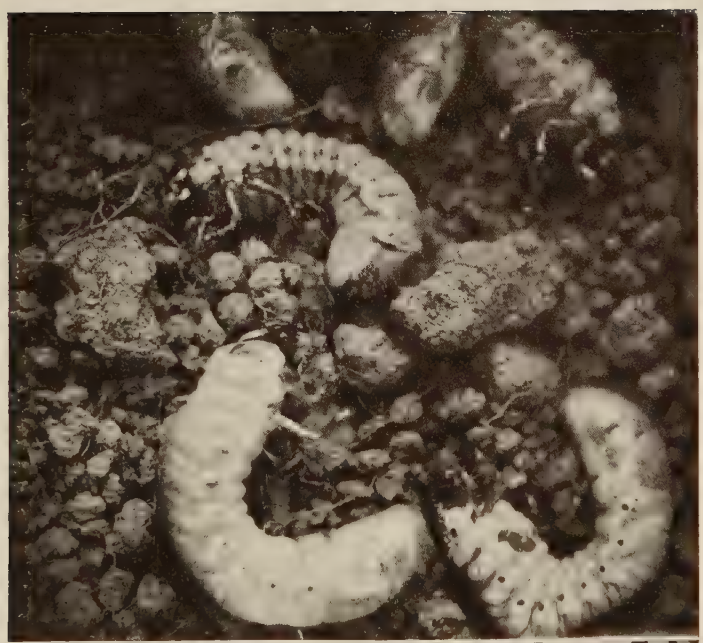
snail, which was a favourite article of food with the ancient Romans, and is still largely eaten on the Continent, hence its popular name of edible or eatable snail. It is found in many districts in England, but is not nearly so common as the garden species. Snails belong to the genus Helix, and lay their eggs in batches under the ground. The female actually prepares a sort of slanting gallery to deposit the eggs in; these latter are white, round, and semi-transparent. The eggs hatch in about a fortnight, and the shell at first is thin and transparent. When cold weather approaches, snails have the habit of exuding a slimy matter which hardens, thus closing the entrance to the shells and protecting the owner—who is snugly tucked up inside his house, which when in motion he carries about with him on his back—from the cold. At this winter season they congregate together for the purpose of hibernating.

**The Dragon Fly.**—These beautiful, highly-coloured insects are erroneously considered to be harmful to human beings, but all British boys—and men and women, too—would do well to remember that dragon flies, or horse-stingers, as they are often called, are absolutely harmless and do not sting, for the simple reason that they possess no sting wherewith to do so! The larvæ figured in our illustration (Fig. 64) are interesting, because not only does the photograph illustrate the larvæ themselves, but also shows how wonderfully they assimilate to their surroundings, appearing like small pieces of aquatic herbage. The eggs being laid under water, the larva, when hatched, passes the first stage of its existence in the water. The larva is a voracious feeder, like the larvæ of most insects, and the reader may have noticed during his wanderings by the water-side the curious caterpillar, or larva, plying about amongst the weeds searching for food. After a time the larva finds its way to the surface, and may be found later in the pupa or chrysalis state adhering to some tall reed or grass near water. The perfect insect is a lovely creature, being brilliantly coloured; it has a peculiar flight, and has been described as 'the eagle of insects,' owing to its predatory character. Mr. Sedgwick tells us that—

'The dragon-fly larvæ are some of the most ferocious of the water-insects, second only to the "water-scorpion." Failing to get any other food, they will attack one another. They are interesting creatures in captivity, and will readily attack smaller larvæ, tadpoles and worms.

'Whilst I was photographing those pictured in the illustration, a tremendous fight took place, and the one hanging on the weed conquered his enemy and sucked him dry. This accounts for the tragic transparency of number two!'

**The Small Garden White Butterfly.**—It will



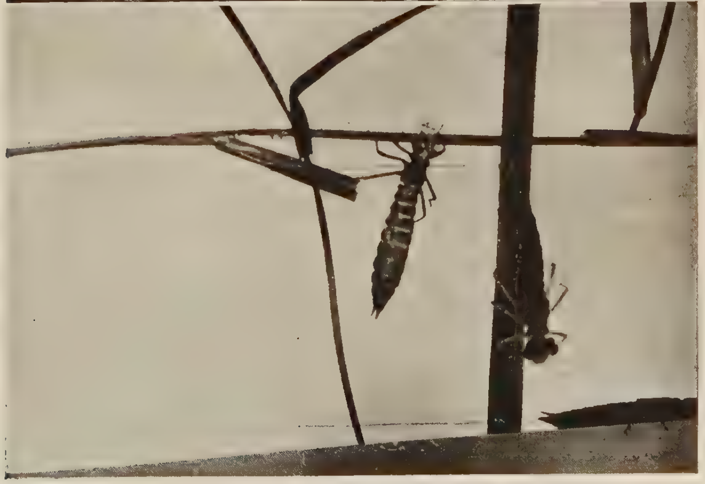


FIG. 63.—LARVÆ OF COCKCHAFER.
FIG. 64.—LARVÆ OF DRAGON FLY.

[*see pp.* 221, 223.

be readily agreed, I think, that the study which our photographer has given us of small garden white butterflies (Fig. 65) is a very charming one. The beautiful white wings and black spots upon same are admirably thrown up by the selected dark background. This is one of our commonest British butterflies, and the larvæ (the caterpillars) feed very largely upon, and do considerable damage to, cabbages. It is very similar in the adult state to its larger relative known as the large garden-white. It may be observed on the wing, not only when it is a nice sunshiny day, but when the weather is dull. It is on the wing early and late, and will be known by sight to almost every British boy. The larvæ are green in colour, with a yellow stripe along the middle of the back, and when full-grown are about 1½ ins. in length. The male and female are marked the same on the under surface, but the female may be distinguished by having on the upper surface a second black spot on the fore-wings, and a club-shaped mark along the hind margin.

**The Cockchafer.**—Most boys living in the country have doubtless noticed this interesting chafer flying about during the summer, and have no doubt often been struck in the face as it winged its way through the air, buzzing all the time. It has been stated many times that this insect makes its first appearance when the hawthorn is in leaf, and there seems much truth in the statement. The female deposits her eggs in the ground early in June, and towards the end of the same summer the young larvæ or grubs appear. They at once commence feeding on the roots of grass, wheat, etc., and have voracious appetites. They feed ravenously, and this appears to be their only occupation for two or three years, their appetites increasing with their size. When full-grown the larva is nearly 2 ins. long, and our illustration (Fig. 63) clearly shows several of them. The head and legs are covered with a brownish shell, otherwise the grubs are soft and grey. They are much sought after by birds when ploughing takes place, and I have known the common house sparrow, as well as the nightjar, to feed very largely on the perfect insect. In about three years the grub assumes the pupa state, and the following spring emerges a perfect beetle. This latter is well known, having a brown, hairy thorax, tail turned inwards, white triangular spots on abdomen, prominent projecting antennæ. Even the adult chafer is a big eater, and is often very destructive to foliage.

**The Convolvulus Hawk Moth.**—Not long since I had several specimens of this very beautiful moth brought to me, and in connection with one particular specimen a curious story was unfolded. The proud captor of the convolvulus hawk moth—for such it proved to be—related to me how he

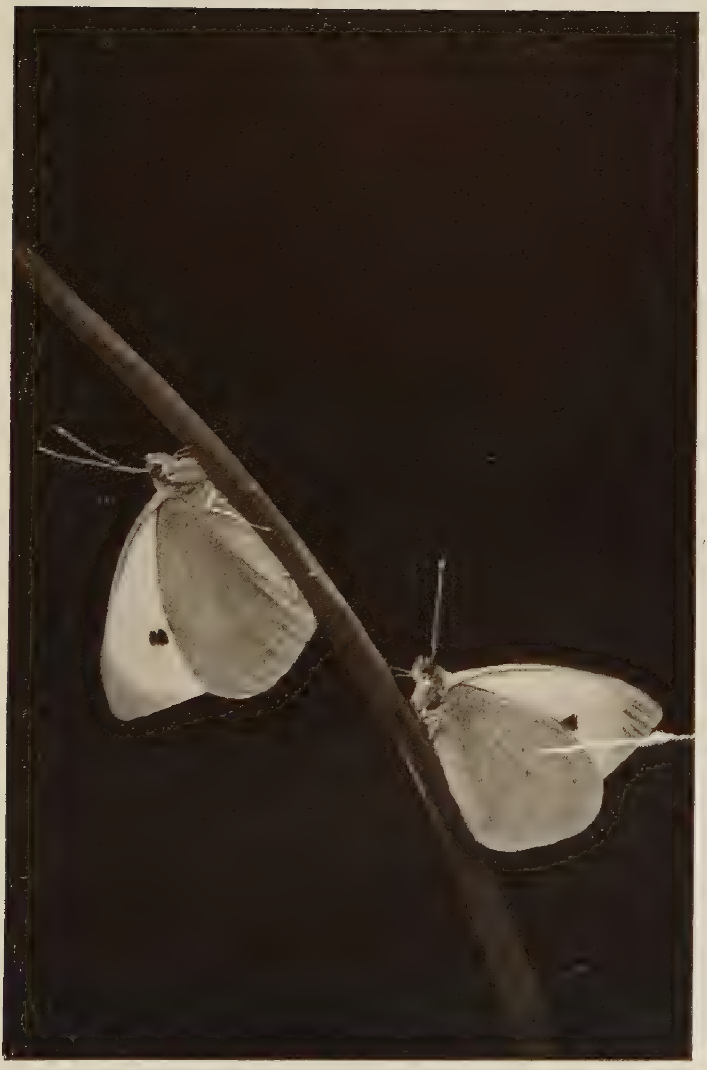


FIG. 65.—SMALL GARDEN WHITE BUTTERFLIES.

[*see page* 223.

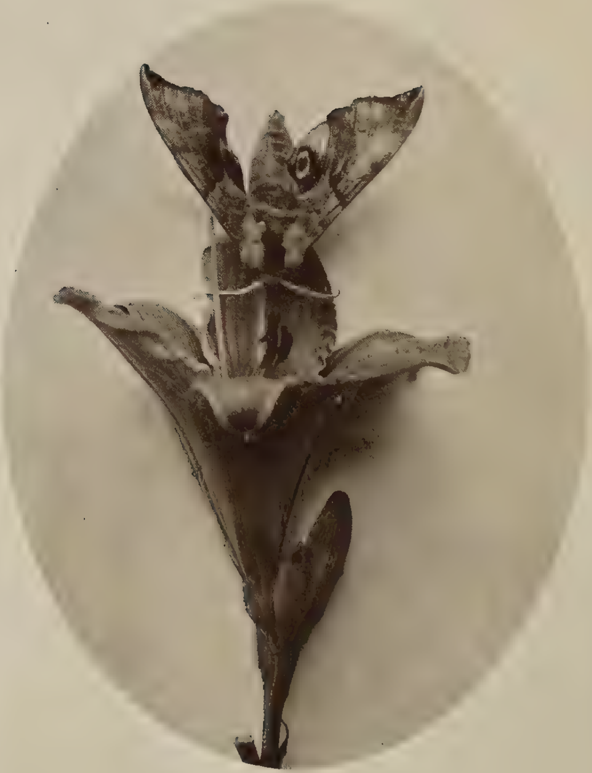


FIG. 66.—EYED HAWK MOTH ON LILY.

[*see page* 225.

saw in the gloaming hour a strange form flying round his room, and then making—as he thought—a dart for him, thrusting out its 'sting' as it did so! At times he thought it was a huge bat, then a bird, but finally he succeeded in knocking what he called the 'uncanny creature' down, and then found it was a large moth! It was brought to me in a battered condition, and proved to be—as already hinted—a specimen of the convolvulus hawk moth. The 'sting' part of the story is distinctly interesting, and goes to show the great ignorance which still prevails in country districts on matters pertaining to natural history. What was taken for the so-called 'sting' was of course in reality the proboscis, which is longer in this insect than in any other European species. This moth is not nearly so brilliantly coloured as many of the hawk moths are, being dark grey on fore wings, pale grey on hind wings, with four bands of black. The abdomen is banded with black and flesh colour, the latter edged in front with whitish. It expands from about 4 to 5 ins. The larva feeds on the small bindweed, wild balsam, and other wild plants.

**The Eyed Hawk Moth.**—Another beautiful hawk moth which was brought to me for identification—also much damaged owing to careless handling—proved to be the eyed hawk moth. This is a very handsome insect, the black 'eye' surrounded by a ring of blue showing up beautifully on the rose colour of the hind wings, on which the 'eyes' are situated. This species is not nearly so large as the convolvulus hawk moth, measuring 2½ to 3½ ins. in expanse. The larva feeds on willow, apple, etc. These eyed hawk moths are found in many parts of Europe and Asia, but in North America they are especially numerous, and Mr. Kirby states that no less that four genera are represented there.

Our photograph (Fig. 66) shows one of these eyed hawk moths on a lily flower, drinking up the sweet nectar; indeed drinking to such an extent that it has become stupefied.

There are about seventeen species of British hawk moths, and the very curious death's head moth is the only one which can utter any sound.

**The Purple Emperor Butterfly.**—The photograph of the larva of this very beautiful butterfly (Fig. 67) is interesting, as illustrating not only the larva of this species, but as another addition to our photographs which reveal protective coloration. As will be observed, it is quite slug-like in appearance, and possesses horns. It is bright green above, and bluish-green below, and on each side there are seven stripes of yellow, with pink edges. The veins or stripes, and the 'graining' on the back exactly correspond to the veins and roughness of the leaves of the sallow, on which it feeds.

The male purple emperor is a most handsome butterfly, and is well named. He is gaudier than

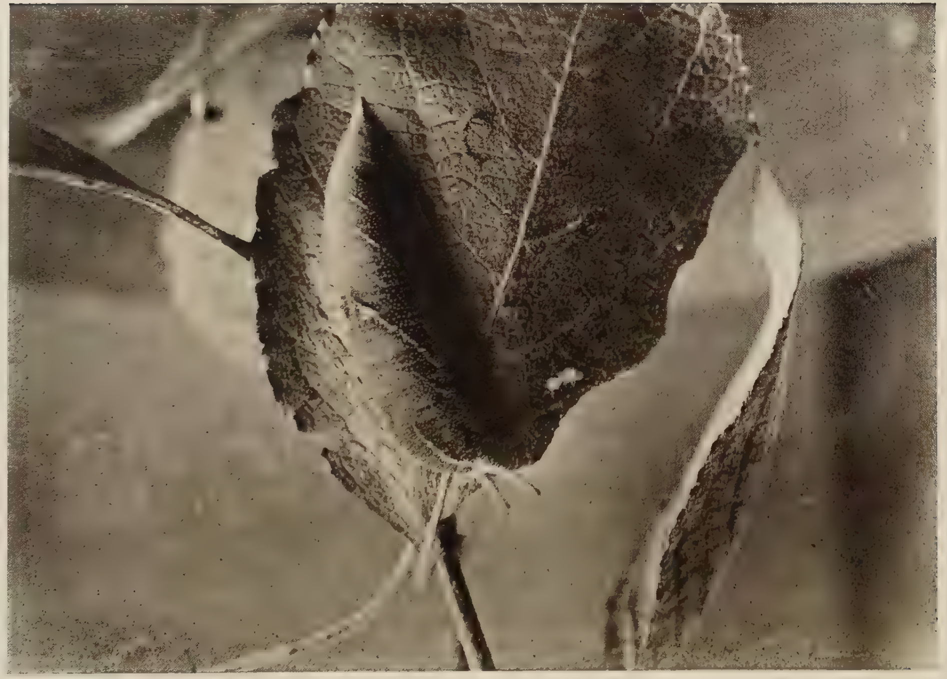


FIG. 67.—LARVA OF PURPLE EMPEROR BUTTERFLY.

[*see page* 226.

the empress, having a beautiful purple sheen, which the female entirely lacks. The ground-colour is smoky-brown above, fringed with white. A white band extends from the centre of the fore-wings to near the inner margin of the hind-wings, and there are several spots of white near the tips of the fore-wings. There is a reddish mark near the tip of the hind-wings, and others at what is called the 'anal angle,' near which is a spot of black encircled with red and a little blue in the centre. The colour of the under-surface is even more beautiful than the upper, contrary to many, if not most, butterflies. This under-surface is much lighter than the upper; the white markings are the same, but on each side of the white stripe on the hind-wings there is a band of rich dark brown, and three white patches on the costal margin of the fore wings. On the hind margin of the hind-wings it is pinkish-white, there is the same eye-spot as on the upper surface, only smaller, and the centre is a more attractive blue. Finally, there is a much larger eye-spot on the under-surface of the fore-wings, which is black in colour, circled with orange, with the centre blue.

The eggs are laid on the sallow (commonly called palm), or goat-willow, and other trees. These hatch off in about twelve days.

This beautiful insect has been described by Mr. W. J. Lucas as 'the monarch of the butterfly tribe,' and 'adopts as his throne the topmost branch of an oak, where he sits aloft in the sunshine, occasionally sailing away almost out of sight, doing battle with his peers, the monarchs of the neighbouring oaks, and returning, as a rule, to the identical spray from whence he started.'

**The Earthworm.**—Although we have no illustration of this common and well-known creature, the following notes may be read with interest. A correspondent writes:—

'I have been a wanderer in the woods and fields ever since I was quite a boy, and am fairly familiar with Nature, but recently I saw something which I have never noticed before, and which greatly interested me.

'I was watching for rats by the side of a small river, when suddenly I became conscious of a slight noise near my feet—a noise like the snapping of small roots. I looked down, and saw that a mole was working its way just underneath the turf. I watched the movement for a minute, and then, to my surprise, I saw three large worms *bolt* (I have never seen worms move so quickly) from the ground about three inches in front of where the mole was working.

'The interesting point to me is that a creature like the worm should have knowledge of the coming of its enemy.'

As my correspondent remarks, it does seem

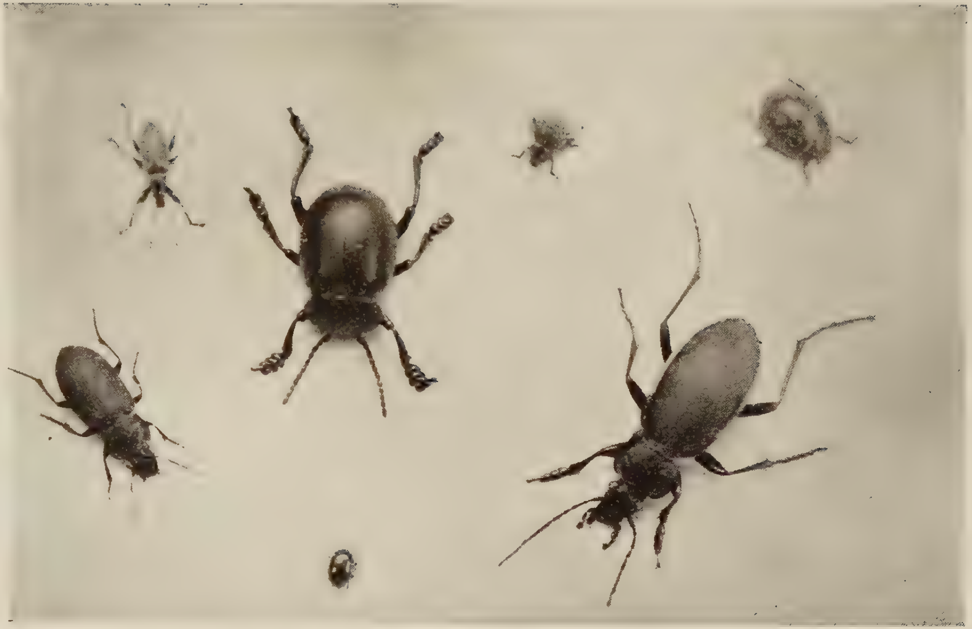


FIG. 68.—BRITISH BEETLES.

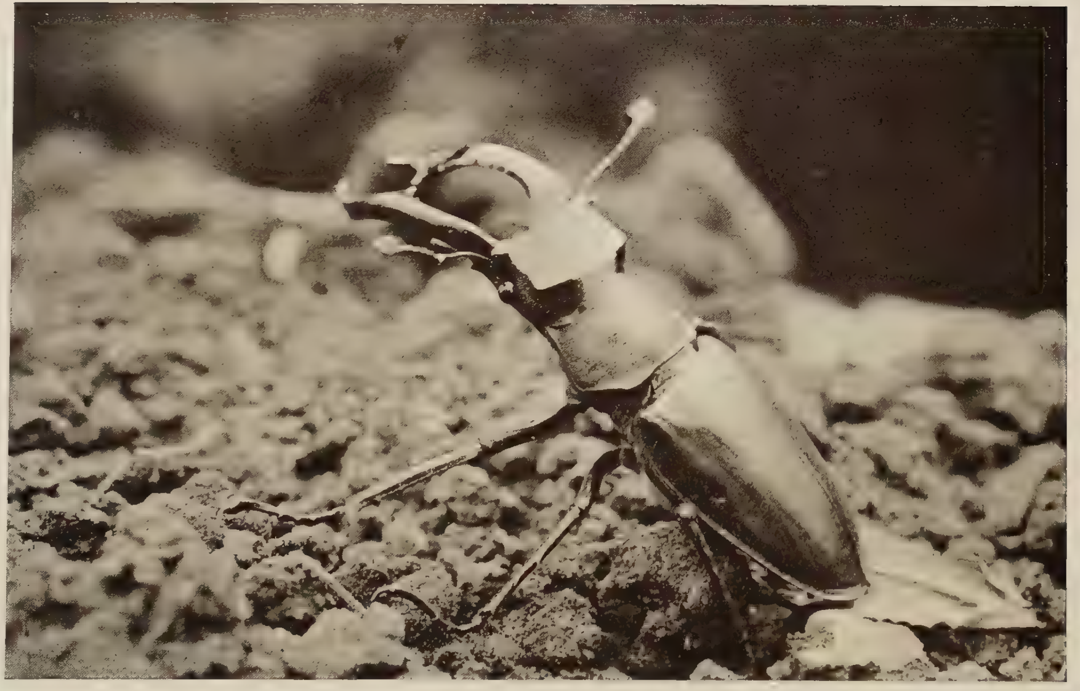


FIG. 69.—STAG BEETLE.

incredible that what one often hears described as 'a mere worm' should possess powers of reason and sense; but that it has these faculties I have more often proved than I care to remember, having had a most intimate acquaintance with their adroitness and cleverness during my night prowls after the wary creatures to fill my bait-tin for the purpose of plying the piscatorial 'art' on the eagerly anticipated morrow. When I have been thus engaged—of course, it is generally known that earthworms come to the surface at night and lie out, especially on damp or rainy nights—I have noted with interest that if a frontal attack is made upon the worm, he will, with lightning rapidity, dart into his hole in the ground again; but, should you attack the worm from behind by digging into the ground, he will crawl out of his hole and make haste to escape. Why? Because in all probability he mistakes the digging for a mole, which latter consumes earthworms in large numbers. Undoubtedly earthworms do a great deal of good in stirring the soil and making it porous, and in other ways help to scour the land; but too many worms may not be altogether beneficial.

**The Orange-tip Butterfly.**—What British boy is there living in the country, who has not during early summer watched the fascinating flight of these very beautiful butterflies along some sunlit hedgerow, admiring its exquisite orange-tipped wings? This is the male, the female lacking this distinctive and beautiful coloration. It has a very short sojourn in the perfect state, only being on the wing a few brief weeks, and is rarely seen after mid-June.

The series of six photographs which illustrate the closing pages of this chapter are most interesting and are almost self-explanatory.

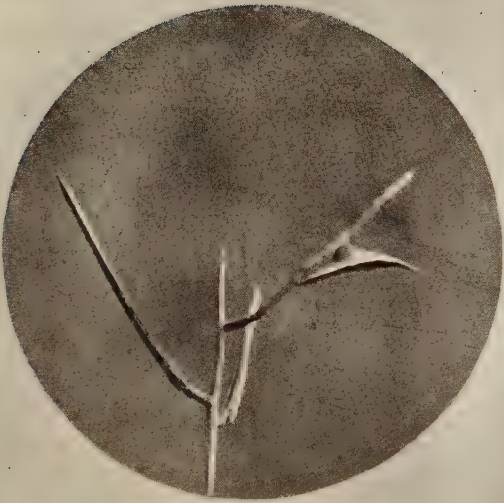
Fig. 70 represents the pupa or chrysalis on the stalk. This pupa is somewhat like a half-moon in shape, being very much pointed at either end. It is dull green above and brownish-pink below.

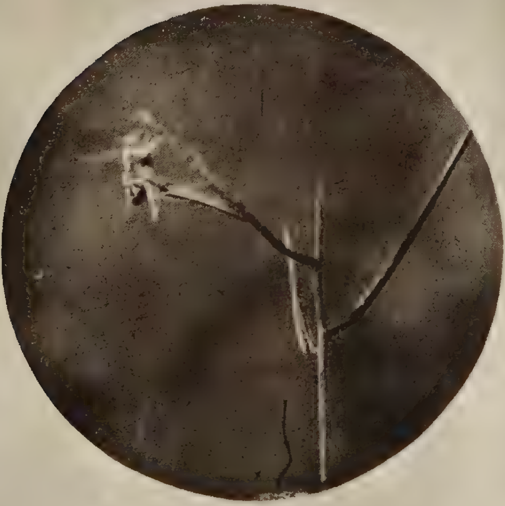
The larva is full fed about the commencement of July, and then turns into the pupa state, and remains thus on the stem of the food-plant until early the following spring.

It then (Fig. 71) commences to emerge, slowly but surely, and by looking at each succeeding photograph, so ingeniously taken by Mr. Sedgwick, you will be better able to follow its life-history than through any written description.

Fig. 72 reveals the wings unfolding, and Fig. 73 the under wings dropping and the young butterfly more considerably spotted.

Fig. 74 shows the orange-tip taking its first journey as a butterfly; it will be observed that it has left the stalk on which it has resided for so many months, and has taken up its position on an adjoining piece of herbage.





Orange-Tip Butterfly.

FIG. 70.—PUPA ON STALK.

FIG. 71.—EMERGING FROM PUPA, FIRST STAGE.

[*see page* 230.

Lastly comes Fig. 75, revealing the perfect butterfly ready for flight, a fitting conclusion to our brief chapter upon a chosen few of the industrious and interesting inhabitants of the insect-world.

## CHAPTER VIII

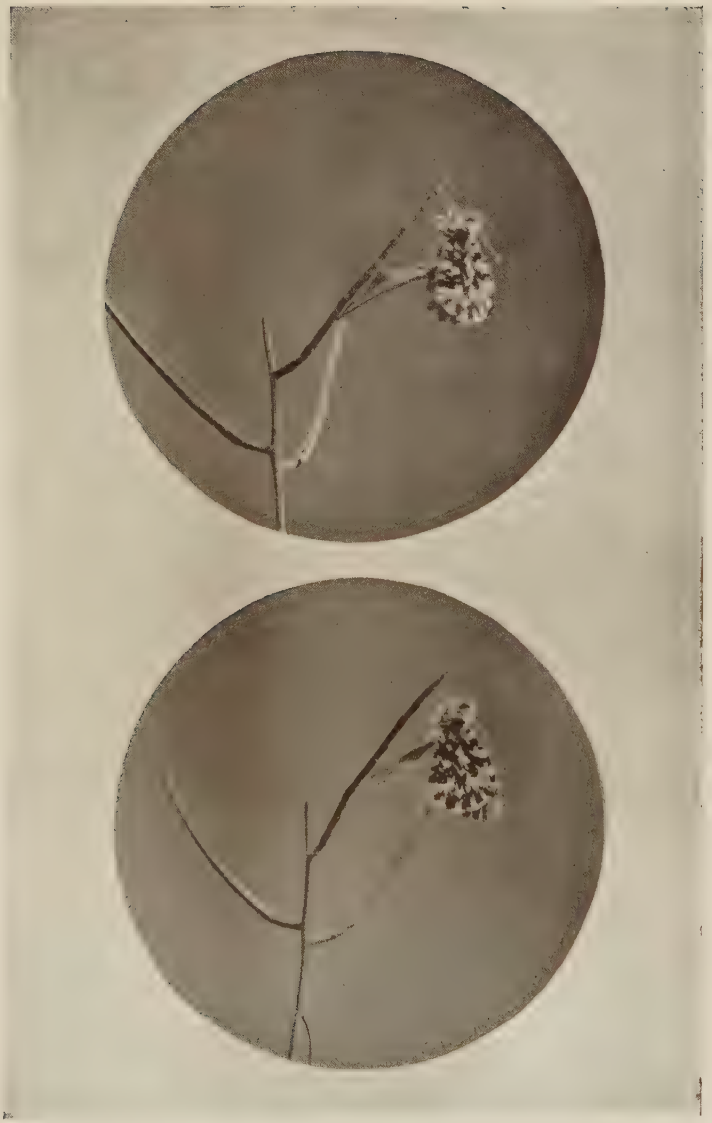
# SOME BRITISH WILD FLOWERS AND TREES

IT is quite impossible in this popular work to in any way completely cover the very fascinating and interesting branch of Nature-study called botany. I propose, therefore, in the first place to very concisely state how plants are classified, secondly, to briefly mention some of the salient structural parts of a plant—and more particularly the flower—and explain what is meant by pollination and fertilization, and thirdly to conclude in as few words as possible as to how cross-fertilization is effected and seeds distributed. After which, I shall take the subjects which Mr. Sedgwick has illustrated and shortly dilate upon and explain them.

To take our first, how plants are classified.

## CLASSIFICATION OF PLANTS

The Vegetable Kingdom may be divided into two great *Classes*—

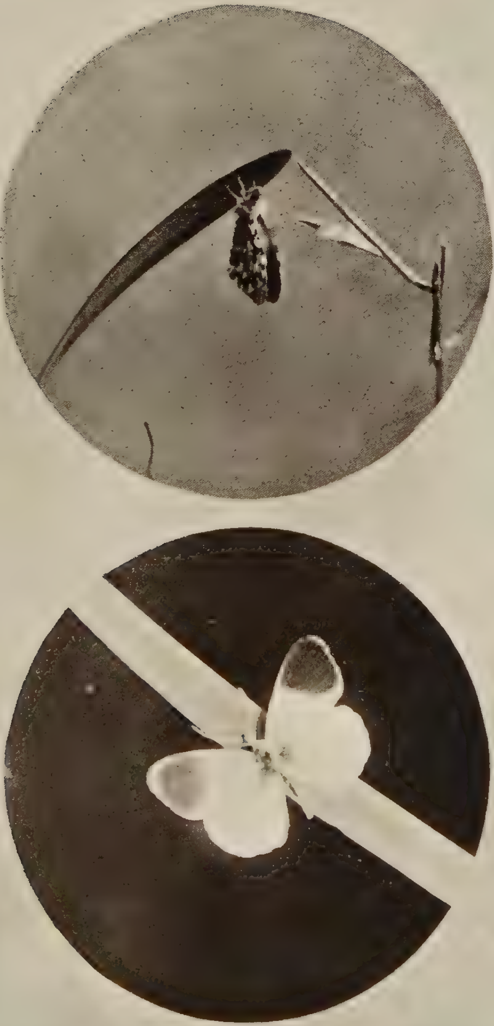


ORANGE-TIP BUTTERFLY.

FIG. 72.—WINGS UNFOLDING.

FIG. 73.—UNDER WINGS DROPPING.

[*see page* 230.



Orange-Tip Butterfly.

FIG. 74.—LEAVING THE STALK.

FIG. 75.—READY FOR FLIGHT.

[*see page* 230.

1. Plants that flower.
2. Plants that do *not* flower.

We now confine our attention to the plants that flower.

These we will divide into two groups—

1. **Angiospermæ.**

(This means flowers with a distinct perianth and ovules contained in a closed ovary.)

2. **Gymnospermæ.**

(This means that the perianth is absent or represented by small scales, and the ovules are not contained in any ovary. Examples, fir trees and other cone-bearing trees.)

We will not stay to deal with the Gymnospermæ, but proceed with Angiospermæ, and here we must content ourselves with a brief outline of the divisions and sub-divisions of same. For more details of classification I refer the young reader to Prof. Henslow's *Botany for Beginners*, or some similar work.

The Angiosperms, then, are divided into two classes :—

1. Dicotyledons.
2. Monocotyledons.

*Dicotyledons* usually have a distinct bark, and the cut stem displays concentric rings of wood. The leaves are generally net-veined (the veins form a network), and the parts of the flower are in twos or fives. The seedlings have two cotyledons, or seed leaves, hence the name *Di*—two ; *Cotyledons*—seed leaves.

*Monocotyledons* usually have no true bark, the leaves are generally parallel-veined (that is from top to bottom, not crosswise as in Dicotyledons), and the parts of the flower are in threes, never in twos or fives. The seedlings have one cotyledon or seed leaf, as, for example, the curled-up seed leaf of the onion bearing the seed husk on its tip.

These classes are again split up into *Divisions* which, in turn, are again divided and sub-divided.

The main *Divisions* of *Dicotyledons* are these—

1. Thalamifloræ.

(Petals free—that is, not joined together; stamens inserted below the ovary.)

2. Calycifloræ.

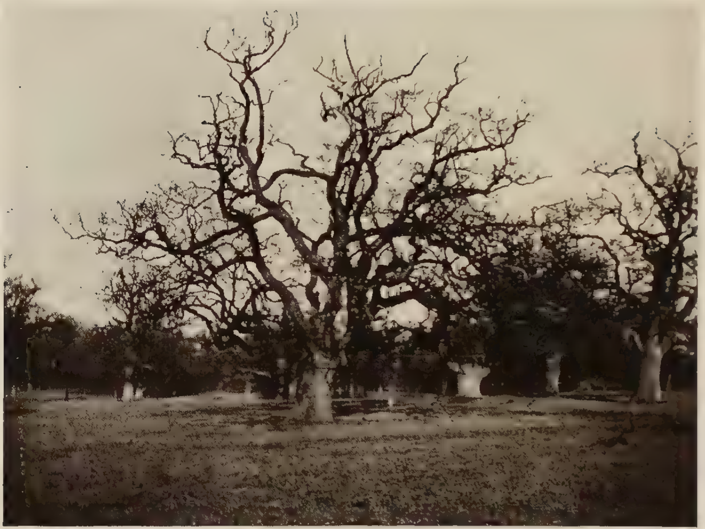
(Petals still free, stamens growing either upon or round the ovary, not below it, as in the previous division.)

3. Gamopetalæ.

(Petals united, stamens usually growing on the petals.)

4. Incompletæ.

(The male (stamens) and female (pistils) organs are produced in separate flowers, for example, the nut hazel. In the three previous Divisions the stamens and pistils are usually found in the same flower.)



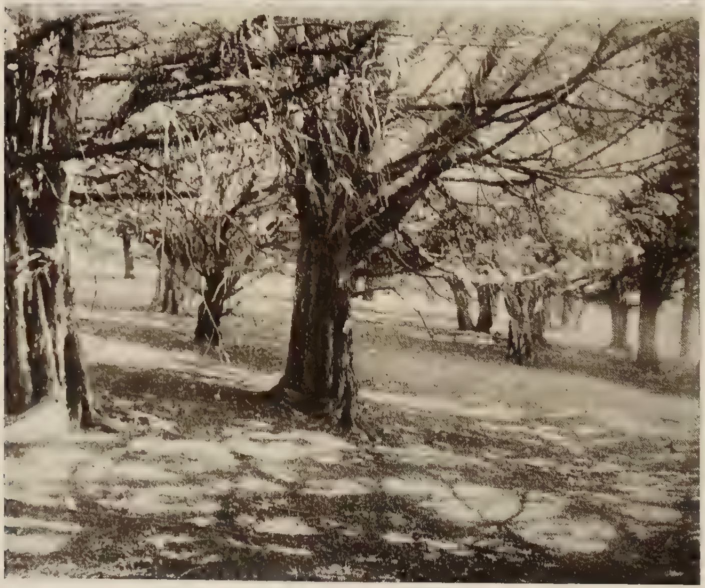


FIG. 76.—THE CROOKED OAK TREE.
FIG. 77.—YEW TREES.

The *Main Divisions* of *Monocotyledons* are these—

1. Spadicifloræ.

(Flowers usually on a spike or spadix, for example the cuckoo pint (see page 247), perianth absent or consisting of small scales).

2. Petaloideæ.

(Perianth usually coloured, rarely green, for example, lilies and narcissi.)

3. Glumiferæ.

(Perianth absent or represented by bristles or minute scales, flowers generally in spikelets enclosed in scales (glumes), for example, grasses, wheat, etc.)

Each of the foregoing Divisions of both *Groups* are again split up into further Divisions which are called *Natural Orders.* Then, these Natural Orders group together a number of plants having some general characteristics which are common to them all, and yet although these plants have certain characteristics in common, they differ in other details of structure which entitles them to be placed in smaller Divisions of the orders which are called *Genera.* Then again, as plants in a given *Genus* show further variation, the *Genus* is divided up into *Species*, and Species are further divided into *Varieties.* Therefore, it may be briefly stated that plants are classified, thus :—

1. Groups.
2. Classes.

3. Divisions.
4. Natural Orders.
5. Genera.
6. Species.
7. Varieties.

It must be distinctly understood that the above brief outline does not pretend to be a guide to the classification of plants, but simply to give an idea of how a botanist traces down a plant through all these Divisions, etc., to enable him to define a *Species.*

Every aspirant for Botanical study and research should know that every plant is given, like every animal, two Latin names, the *first* denoting the generic (Genus) and the *second* the specific (Species) names.

## PLANT STRUCTURE AND POLLINATION

A plant is composed of the following parts: 1, root; 2, stem; 3, branches; 4, leaves; 5, flowers; 6, fruit.

1. *The Root.*—The work of the root is, briefly, to anchor the plant in the soil, and to absorb, by means of minute hairs growing on the younger roots, soil-foods in solution. Sometimes roots perform other functions; for example, the carrot and beet store up in their roots reserve food, which enables the plant to live through the winter, and

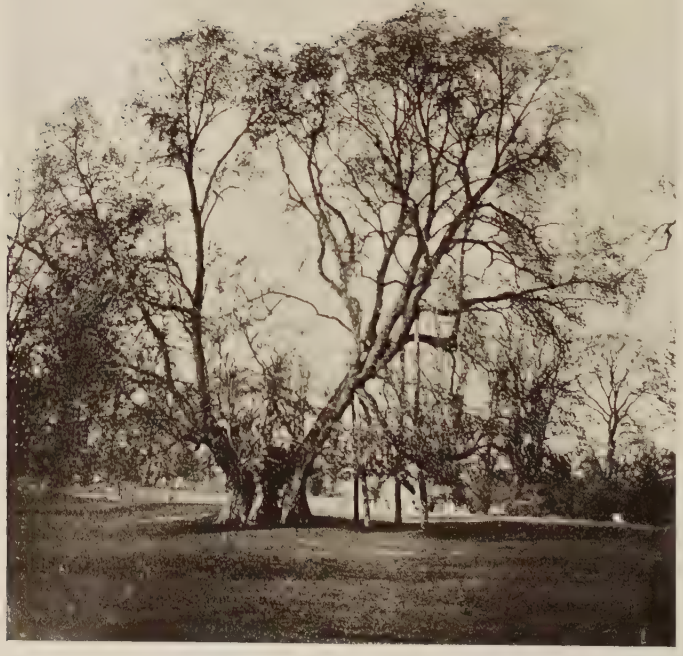


FIG. 78.—WYCH ELM TREE.

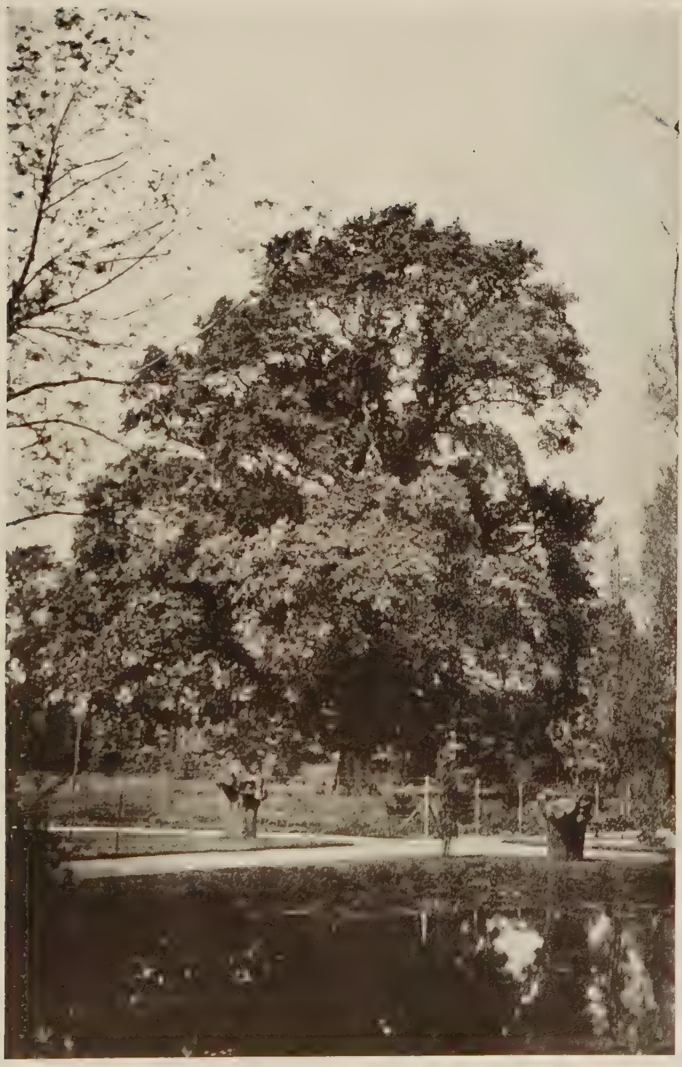


FIG. 79.—TREE IN FULL LEAF.

produce flowers and seeds in the second year of its life.

2. *The Stem* supports the branches which carry the flowers and leaves, and also acts as a conductor of the water containing food, from root to leaf.

3. *The Branches* enable the plant to expose leaf-surface to a considerable area of air, and also to bear flowers and fruit.

4. *The Leaves*, as mentioned at the conclusion of this chapter, are workshops in which the food from the soil and the air is manufactured into compounds for the use and sustenance of the plant.

5. *The Flowers* are the fruit-producers, as we shall presently see.

6. *The Fruit*, or ripened ovary as it is strictly termed, contains the seed which enables the plant to perpetuate its species.

We will now study a typical flower, and take the parts in order, commencing from the outside. It is taken for granted that the flower is produced on a stalk. You will first observe a *whorl* of green leaves, which, when the plant is in bud, entirely envelops the other floral organs. This whorl of leaves is called the *calyx*, made up of separate leaves termed *sepals*. The use of the calyx is generally to protect the flower when it is in bud. Sometimes the calyx remains after the fruit has ripened, for example, the strawberry. Passing inwards, another whorl is reached, made up of coloured leaves, called *petals*, the whole being called the *corolla*. The word *perianth* embraces these two floral organs (calyx and corolla), and is mostly used in describing such plants as the lily, narcissus, etc., where the calyx and corolla are not easily distinguished. The function of the petals is partly to protect the essential parts of the flower and partly, by their usually brilliant colours, to provide attraction for insect-visitors, as we shall see later. Other attractions for insects are provided in the form of honey-glands, secreted in the flower, and which justly compensate the insect-visitor for his visit; and scent also acts as an attraction-agent.

*Organs of Reproduction, Pollination, and Fertilization.*—The next whorl of organs are called *stamens*, mostly having a slender stem or stalk, called a *filament*, bearing on the top a rounded body called an *anther*, which contains a yellow dust called *pollen*. Sometimes the anthers have no filament, but are seated directly upon the part of the flower from which they grow.

*The Stamens are the male organs of the plant.*—Immediately in the centre of the flower may be observed a structure called the *pistil*, which usually consists of three distinct parts; the lower part is known as the *ovary*, containing small eggs or ovules, which after fertilization become seeds.

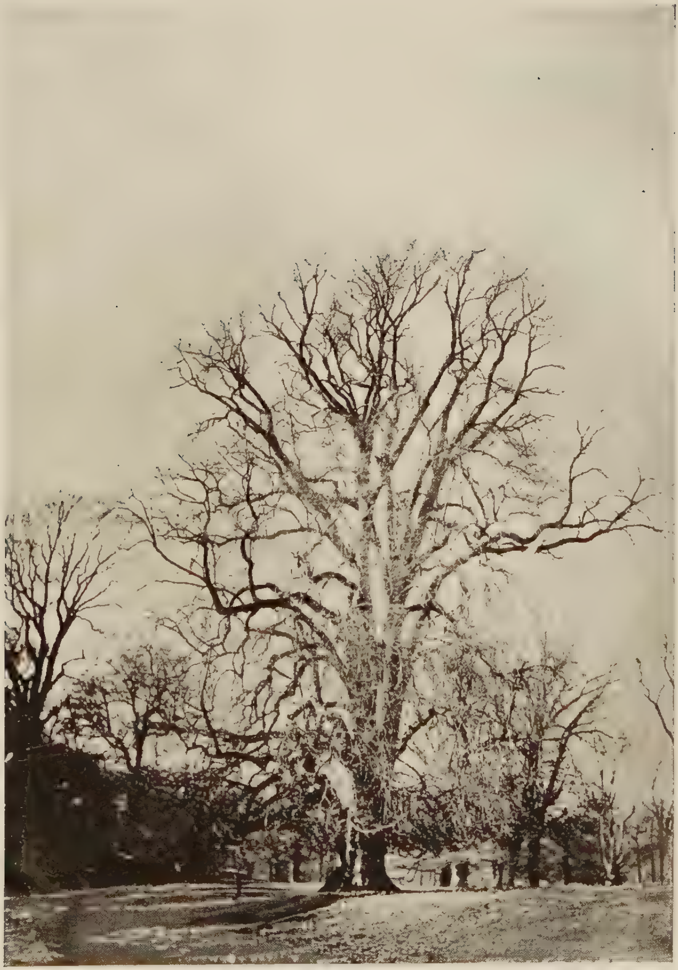


FIG. 80.—HYBRID LIME TREE.

Seated upon the ovary is one, or more, slender stalks called the *style*, the tip of which in some cases becomes flattened or rounded. This latter is called the *stigma*. The function of the *stigma* is to receive on its usually sticky surface the ripened pollen grains from the *anthers*, which germinate by pushing a slender tube down the *style* into the *ovary*, where they reach the *eggs* or *ovules*. In some plants—for example, the poppy —the stigma is seated directly upon the ovary, and is not borne on a style. The contents of the pollen grain which have followed the end of the tube passes into the egg-cell, and now a wonderful change takes place. The egg changes into a seed containing an *embryo* or young plant. A change also takes place in the *ovary*, as it immediately develops into what is known as the *seed-vessel*. The seeds also become fully grown, and when matured, the seed vessel, or ripened ovary, in various ways liberates the seed for dissemination by means of different agents, as we shall presently see.

*The pistil is the female organ of the plant.*—Sometimes a suppression of parts takes place in a flower, and it is quite common to find plants without petals, or those in which the petals are reduced to such small dimensions as to be scarcely noticeable. It often happens that in such cases the *calyx* becomes coloured and *petal-like*, and may be taken for petals—for examples, the anemone and monkshood—but on observation it will be found that it is the outer whorl that is coloured, and it must, therefore, be the *calyx*.

*What is an Inflorescence?*—Flowers are arranged on the flowering stem in various ways, the arrangement of flowers in this way being termed an *inflorescence*. A few may be briefly mentioned. The inflorescence of the foxglove is called a *raceme*, as also is that of the currant and laburnum. The inflorescence of the forget-me-not is called a *cyme*, and that of the charlock is known as a *corymb*. The inflorescence of the hedge parsley, the cow parsnip, carrot, and pignut are called compound *umbels*, all the flowers arising at the same level; whilst the ivy and cherry afford examples of what is known as a simple umbel.

In some instances the flowers are borne on a long stalk, each flower growing without a stalk, being attached immediately to the main stalk. This is called a *spike*. The inflorescence of the quaking grass is termed a *panicle*. The inflorescence of the dandelion is known as a *capitulum*, in which each floret is seated immediately upon a flat receptacle, so that you will see that the dandelion head is not a single flower, but an inflorescence, the flowers of which, instead of arising from various parts of the flowering stem, all arise from a horizontal plane. Thus, the

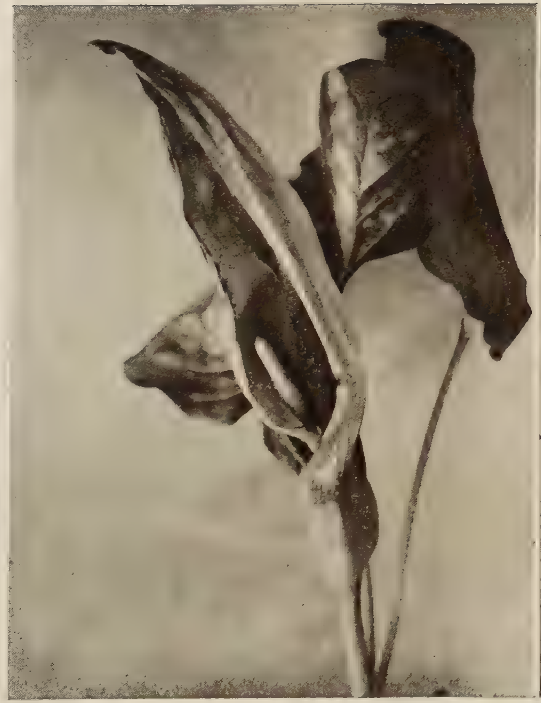


FIG. 81.—CUCKOO PINT, OR WILD ARUM.

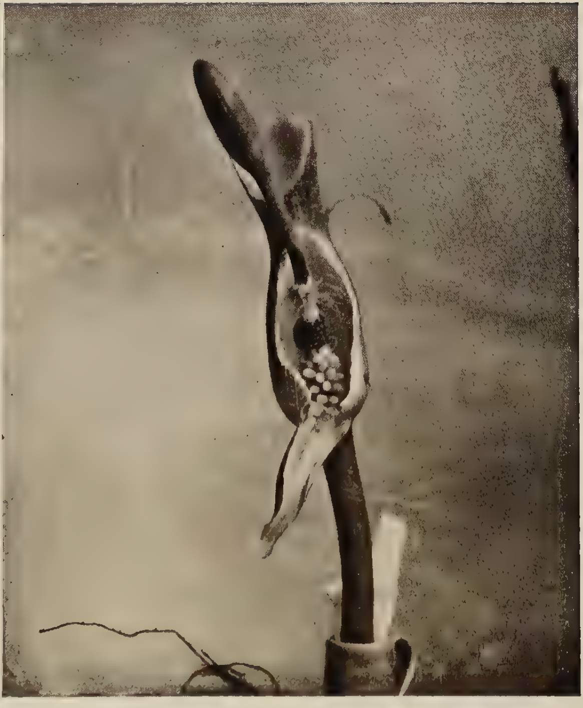


FIG. 82.—SHOWING INTERIOR.

dandelion flower-head is made up of a number of florets—sometimes more than 150—most of which are perfect flowers. The whole of the flower-head is surrounded by a structure called an *involucre,* consisting of whorls of green leaf-like structures called *bracts,* not a *calyx,* the *calyx* proper being found at the base of each floret, and forming a *pappus.* It may be mentioned here that in many other flowers besides composites—to which the dandelion and the daisy belong—*bracts* are produced outside the *calyx,* for examples, the common buttercup and strawberry.

## HOW PLANTS ARE CROSS-FERTILIZED AND THE SEEDS DISTRIBUTED

You have already learned what pollination means, and how a flower becomes fertilized, but it is necessary to show how pollen is carried to those flowers which depend for fertilization upon the pollen of other flowers reaching them. The two principal agents engaged in the distribution of pollen are wind and insects. It is thought that wind-fertilization was the earliest form of cross-fertilization (where it was impossible for plants to fertilize themselves), and that the cuckoo pint was one of the earliest plants to be fertilized by insects.

In many plants the flowers offer no attraction to insects either by means of their colour, scent, or honey. It is necessary, then, that the pollen should be carried by some other agent, namely, wind. We find also that these flowers produce an abundance of pollen, for the purpose of making sure that some of the precious grains shall reach the stigma of the pistil (the female organ), these latter being usually branched so as to catch the pollen borne by the wind. Examples of wind-fertilized flowers which may be mentioned are: grasses (see below), the nut hazel and other catkin-bearing trees.

A curious phenomenon is presented by the pollen from the grasses just when it is at its zenith and there is a strong wind blowing. The pollen rises in vast clouds, as of smoke, and we are thankful we are behind the wind, so as to escape the cloud, and perchance an attack of hay-fever! To the unobservant the pollen-laden air would be dust or smoke, but to the rambler along the countryside, who cultivates the useful habit of observation, this is not so, and the curious phenomenon is duly chronicled in the note-book. On a recent occasion I observed this pollen distribution from a field of bents; the anthers had apparently just burst, the wind sprang up and carried along the pollen on its bosom, thus affording an excellent example of Nature's wonderfully thought-out agency for the distribution of pollen by the aid of the wind.

You will have already learned that the colour and scent of, and honey secreted in, flowers attract

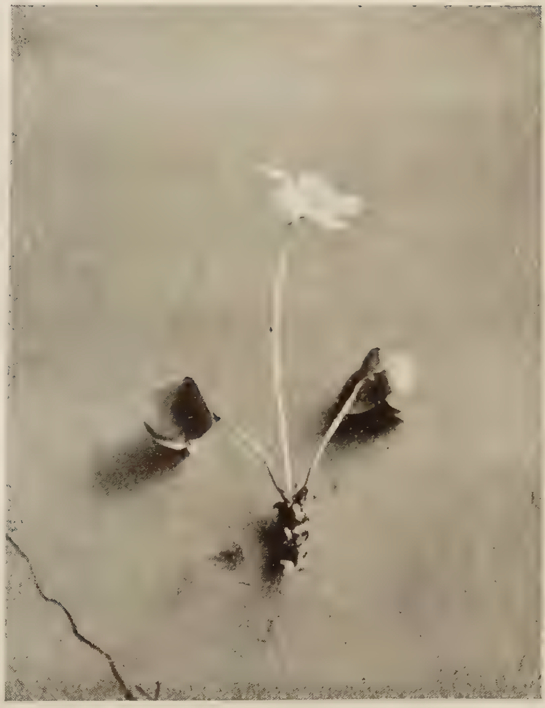


FIG. 83.—WOOD SORREL.

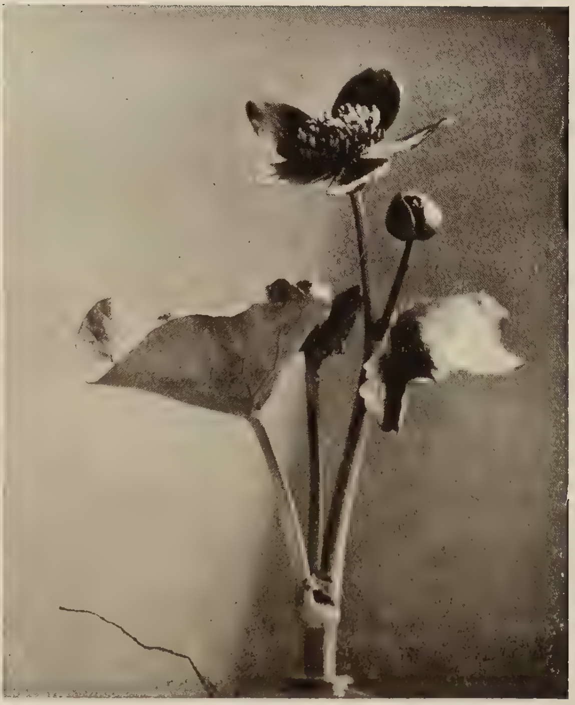
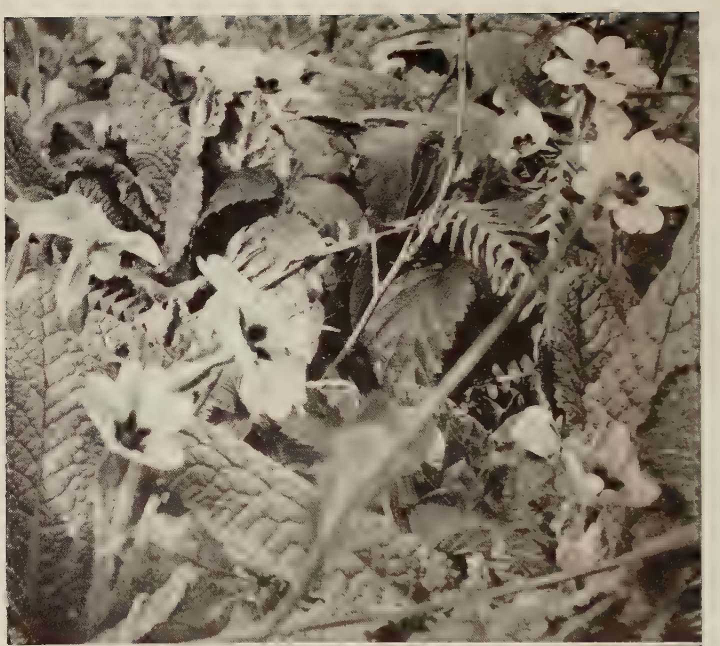


FIG. 84.—MARSH MARIGOLD.

insects. The form of flower is usually adapted to the particular insect which visits it. In some cases the *corolla* forms itself into a tube opening on one side only, the lower petals forming a platform on which the insect must alight, therefore it comes into contact with the *stamens* that guard the entrance and also the *stigma*; for examples, the snapdragon and the dead nettles. In other cases the flowers have a long tube, and depend entirely upon an insect with a proboscis long enough to reach the honey at the base. These flowers, in order to protect themselves against the visits of small insects that could reach the honey without touching the stamens, adopt various methods of keeping out these robbers; for example, the tobacco plant is sticky on the outside, which prevents insects crawling up to the entrance of the tube. In other plants the flowers open at night and close by day; for example, the evening primrose, when night-flying moths are about. Other night-flowering plants produce a strong scent as an attraction to insects. Another example is the common barberry which has sensitive stamens, at the base of which honey is secreted. As soon as the insect touches the sensitive base of the *stamen*, the *stamen* suddenly springs up, and coming sharply into contact with the body of the insect the *anthers* burst and cover the insect with *pollen*. The insect then proceeds to a fresh flower, and the *pollen* from the insect's body is deposited on the sticky surface of the *stigma*, and cross-fertilization is effected. When cross-fertilization fails, as a last resource some plants fertilize themselves, but, generally-speaking, it has been proved that from cross-fertilized flowers stronger and more healthy plants are produced.

*Seed distribution.*—Seeds of plants are distributed in various ways. Some distribute their own seeds by the bursting of the seed-vessel, for examples, the violet and herb robert; others by wind, for example, the dandelion (*pappus*), elm, and sycamore (winged-fruits). Prickly seed-heads are frequently distributed by animals and even man, for on a recent ramble through a bit of untenanted cover, I was smothered almost from head to foot with the prickly seed-vessels of burdock. When I discovered the state of my clothing I promptly dislodged the curious-looking fruit, and throwing it down by the wayside helped unconsciously to distribute this plant in places where under more natural conditions it might not perchance have been carried.

Seeds are also eaten by birds—for example, the seeds of chickweed, plantain, thistles, etc., are partaken of by finches and other birds—and not only are the seeds distributed by being scattered broadcast as the birds ravenously extract them, but are carried by them to some secluded retreat (some probably being dropped on the way) where



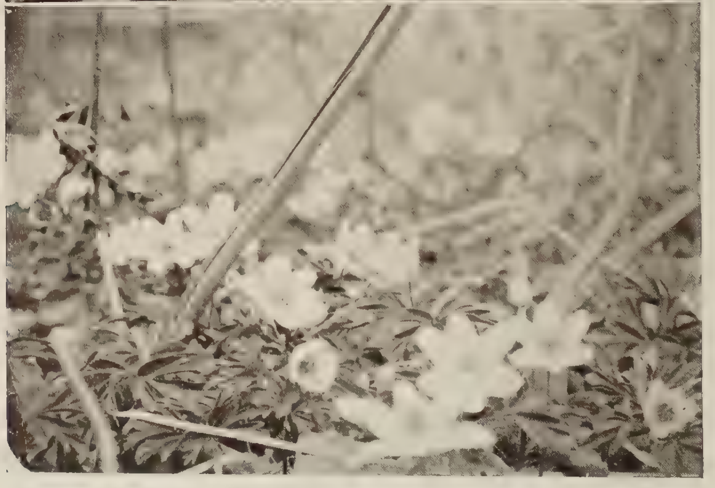


FIG. 85.—PRIMROSES.

FIG. 86.—WOOD ANEMONES.

[*see page* 256.

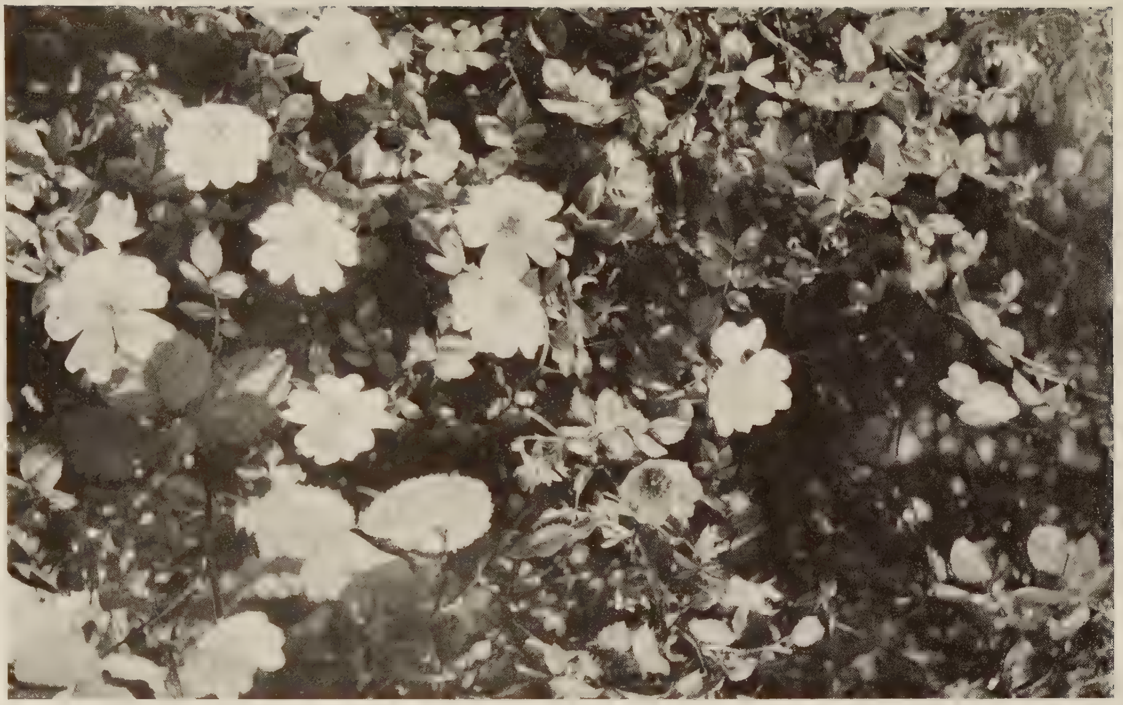


FIG. 87.—WILD ROSES.

[*see page* 260.

they can enjoy their meal in quietude. Thus it comes about that one finds cherry trees, raspberries, currants, gooseberries, and other fruits growing in woods through the seeds having been either dropped by the birds, or having passed through their bodies uninjured.

The great Charles Darwin once grew no less than eighty-two plants from seeds secreted in a ball of clay which he had taken from the foot of a red-legged or French partridge, a bird, by the way, which is increasing very prominently in this country. This single instance illustrates very forcibly one of the ways in which birds act as distributing agencies in Nature, and beyond this proves the practical experiments which the great scientist above mentioned carried out.

Amongst the many interesting points raised by Lord Avebury, in one of his presidential addresses to the Selborne Society, was that of the seed-scattering powers of the little herb robert, or wild geranium, whose fresh pink blossoms garland the hedge-banks, more especially in the neighbourhood of a wood, during the summer time. Lord Avebury stated that he had carried out an experiment whereby to ascertain the distance herb robert could disperse its seeds. He obtained a plant containing a seed-vessel and placed it on his study table. The seed-vessel duly burst, but the seeds had been scattered beyond the limits of the table, and could not be found. Another plant was then placed on a billiard-table, but the seeds also dispersed beyond the limits of this, although, if I remember rightly, his lordship did not state whether it was a full-size table or not. A cloth was then stretched at the end of the billiard table, and with this addition the limit of the scattering powers of herb robert was discovered, as Lord Avebury traced the seeds on the cloth, and found on examination that the distance they were thrown was no less than 20 feet!

Bearing in mind that the seeds were not dispersed with the plant growing amidst its own native habitat, this must be considered a really remarkable experiment, and it is only reasonable to suppose that in a state of nature the seeds of the herb robert are scattered to a distance of 20 feet or more; for under more favourable conditions than those alluded to, the distance traversed would doubtless be much greater.

One of the many fascinating items in the study of outdoor botany is the extraordinary and unlikely places in which wild flowers are continually making their appearance. This plant-distribution is of course largely governed by the nature of the soil; thus on a chalky soil the flora varies a great deal from that which is found on a clay soil, and instances might be multiplied. What I specially want to convey to the reader, however, is the

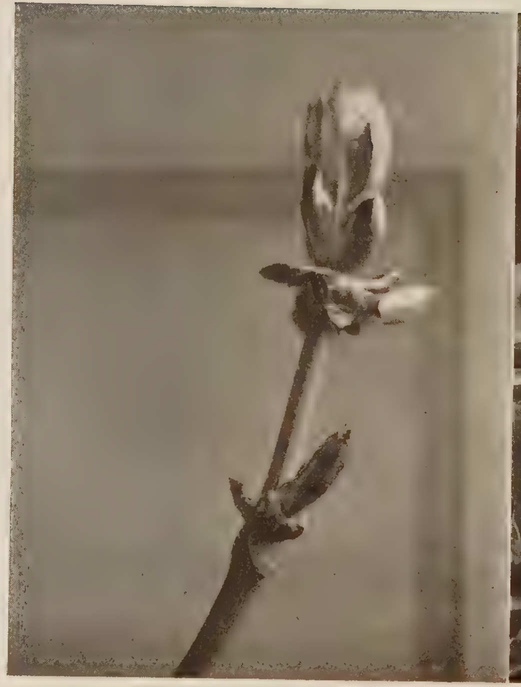


FIG. 88 —HORSE CHESTNUT SHOWING BUDS.

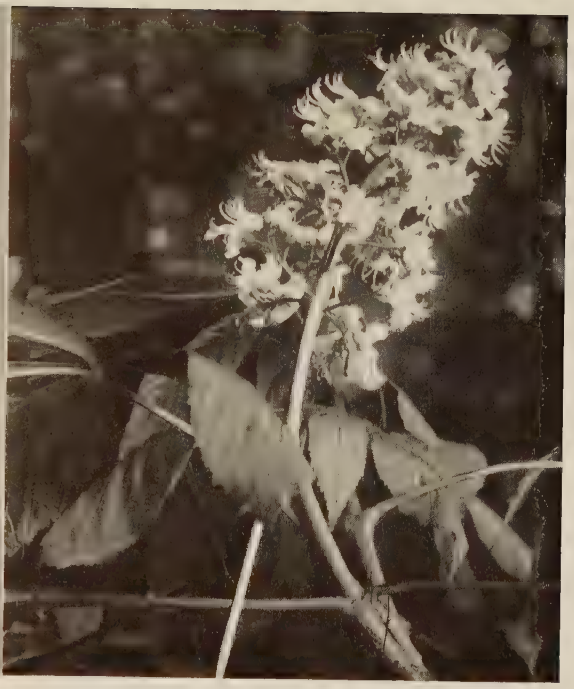


FIG. 89.—HORSE CHESTNUT SHOWING FLOWER.

[*see page* 265.

extraordinary places in which wild flowers unaccountably propagate themselves on certain occasions. For instance, I have often found the willow herbs—which delight in marshy situations—growing strong and well in a barren, dry, stony road; but a most extraordinary occurrence was recently brought to my notice. In a friend's drawing-room a field convolvulus had actually grown from the foundations of the house, and forced itself through the small crack in the skirting round the room! At the time of writing the plant is several inches long, has quite a number of leaves, and is being carefully trailed round the fireplace! The house has been built some two or three years, and this reminds me that in the drawing-room of my own house a similar incident occurred, but I do not remember what the particular plants were which made such an uncanny appearance in my own room!

**The Cuckoo Pint.**—Among the earliest spring plants which thrusts its twisted green spathe through the earth and pleases the eye of the rambler with the fresh green flush, is the cuckoo pint, more commonly known as lords and ladies.

For preference, obtain a plant from the countryside—for they are extremely numerous, and no harm will be done by plucking one, more especially as you have some object in view—or follow my remarks by carefully noting the two illustrations given of this wild plant (Figs. 81, 82). Early in the spring—indeed, for some time after the plant has forced its way through the earth—the curious spathe which envelops the interior does not unroll, but as the essential organs of reproduction inside the spathe come to maturity and are ready for fertilization, the spathe opens as depicted in our first cuckoo pint photograph (Fig. 81), and allows a full view of the very curious fleshy column inside, which is called a spadix. It will be noticed that the spathe acts as a sort of protecting hood, and is a beautiful illustration of how Dame Nature looks after and protects her children.

Now, this spathe is called a bract, not a calyx, and is one of the most largely developed bracts found on any British plant. Carefully note the flower-head as seen in Fig. 81, and then accompany me to Fig. 82. Here our photographer has taken away a part of the spathe to allow us to peep into the very curious interior. Notice the club-shaped spadix in the first place, then follow down the spadix from where it so considerably narrows. You will observe white hair-like appendages; these are called rudimentary stamens. They play no part in the real fertilization, and yet are important agents in a manner which we shall shortly see. Next to these comes a ring of red seed-like objects. What may these be? These, then, are the stamens proper. Next comes another set of hair-like

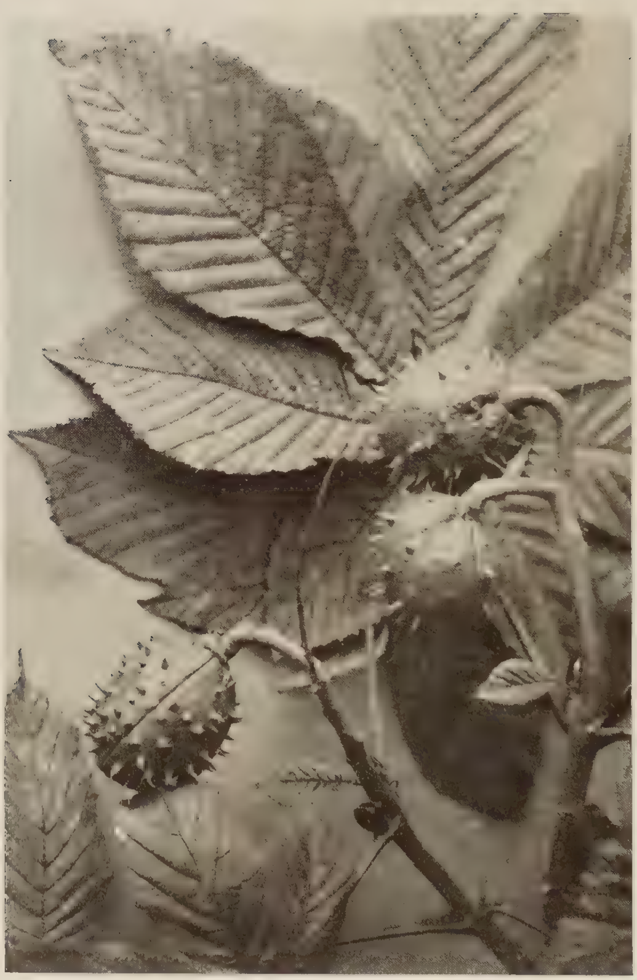


FIG. 90.—HORSE CHESTNUT SHOWING FRUIT AND LEAVES.

[*see page* 266.

appendages; these are barren pistils; and last come the pistils themselves. Now, how do you think this plant is fertilized? You have already been told what pollination and fertilization mean, namely, pollen grains from the anthers of the stamens must come into contact with the ripe stigma of the pistil. You will probably reply that the plant is self-fertilized; that the pollen becomes ripened, the anthers burst and let the pollen grains fall upon the pistils below. A very logical and simple answer; but it has been proved that the pistils are usually fertilized before its own pollen is ripe; therefore pollen from another plant must have been obtained.

It is rare, then, that the cuckoo pint is self-fertilized. But what happens? Examine a cuckoo-pint plant in the spring, open out the spathe, and you will in every probability find several small insects secreted right at the base of the spadix, just near the pistils—over one hundred small insects have been found inside one plant. These little insects crawl inside the spathe and proceed downwards. The hair-like rudimentary stamens and barren pistils do not deter this progress, for they have their ends curved downwards for the most part, and so help it. The insects reach the base of the spadix, and having stayed there a sufficient time for their purpose they ascend, but on going up they find their progress barred by the barren pistils and the rudimentary stamens. In fact, they find themselves prisoners, and descend once more to the base of the plant, in the little cup-shaped bottom depicted in Fig. 81. Here they remain.

But, you will say, for what purpose? Because Nature has ordained it that those little insects and those rudimentary stamens and barren pistils are to play an important part in the fertilization of this plant. By-and-by, the anthers of the stamens ripen, the pollen falls upon the bodies of these insects. About the same time the hair-like objects which have imprisoned the insects wither and dry up, the insects climb the spathe or the spadix, and find themselves free. What do they do then? They hie away to a neighbouring cuckoo pint plant, crawl inside the spathe and hasten to the base. The pistils there being ready to receive the precious pollen, and the insects being laden with the pollen from the plant just left, their burden falls from their little bodies on to the pistils, the stigma receives the precious grains, and fertilization is effected! Later on in the year, towards autumn, the arrow-shaped leaves of the cuckoo pint (which are often spotted) have withered away, exposing to view the prominent bunch of scarlet berries.

**The Round-Leaved Sundew.**—This most interesting plant is widely distributed throughout the world; indeed, where the soil is at all boggy or

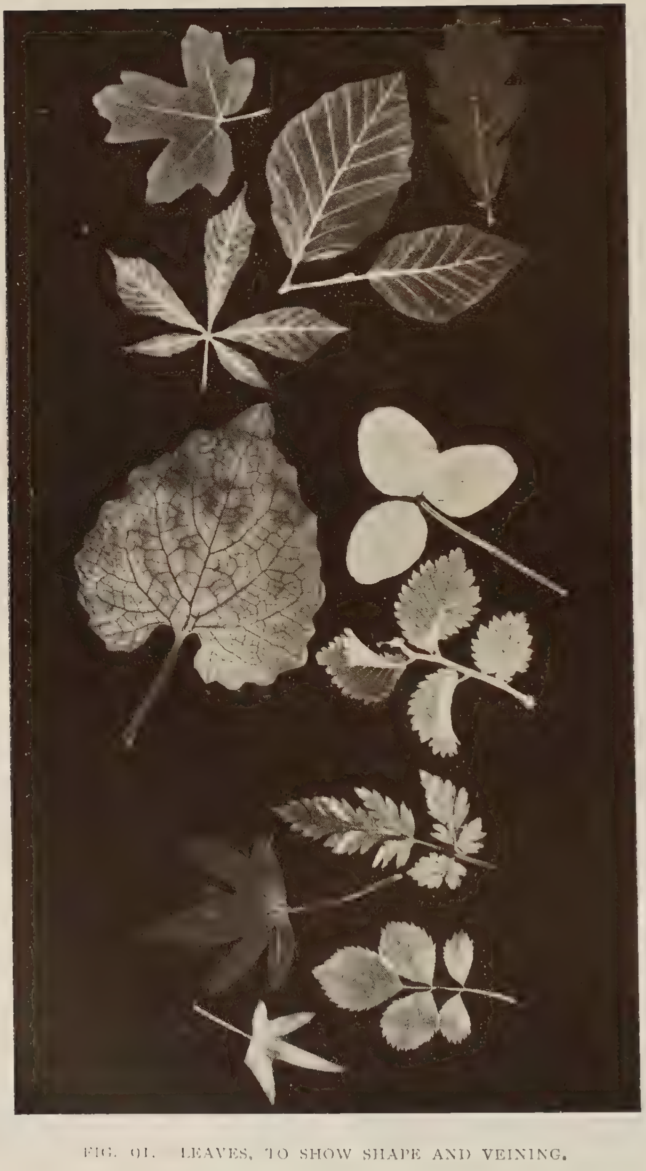


FIG. 91. LEAVES, TO SHOW SHAPE AND VEINING.

[*see page* 268.

marshy there this plant may be looked for. It cannot, either, very well escape the notice of the most casual observer, as its bright and round little leaves and the peculiar hairy nature of the same cannot fail to attract attention. The reader, however, may hardly credit the information that an English plant catches and devours flies and other insects! Yet this is actually what this wonderful little plant performs in its struggle for existence. It is, in fact, an insectivorous plant; the very small roots which it possesses merely supply it with water, but at the apex of every tentacle of its leaves is secreted a sticky moisture, which aids the plant in catching small insects and holding them fast. Once having secured its prey, the plant has the power of giving out, through the clubbed end of the hair, more of the sticky fluid, making the insect a veritable prisoner, the sensitive hairs then close over the insect and doubly secure him. Then, if the plant be carefully watched, it will be observed that others of the little hairs are drawn towards the insect, and curl round it in the same manner as do the tentacles of a sea-anemone round its food, and the acid-like fluid in every hair or gland increases. All help to quickly dissolve the insect's body, and thus aid in feeding the whole plant by means of the glands carrying the juices from the insect's body!

No more wonderful illustration of the habit of this plant is needed than to obtain one such and keep it in a saucer of water, feed it with small pieces of meat or an insect of some sort, and watch it enjoying a meal! When the hairs uncurl and the leaves are fully open, digestion may be said to be complete. Sometimes the wing of a butterfly or the leg of some other creature may be seen attached to the sticky leaves.

This plant is not a free bloomer, and the little white flowers very frequently go to seed without opening their petals, acting entirely independent of insect aid in this respect.

**The Wood Sorrel.**—This fragile but graceful little plant is one of the earliest to open its welcome blossoms in the spring. It is a typical woodland flower, and is often confused by dwellers in the country with the wood anemone described on page 257. It may be found in flower during early April—I have observed it in March—and it has a great love for damp, shady places in the woodland. The leaves, as will be seen from Fig. 83, are borne on long, slender stalks, and each leaf is made up of three heart-shaped leaflets which are delicate yellowish-green above and darkish purple below. Towards evening or in wet weather these leaflets hang their heads and droop. The flowers are pure white, streaked with delicate veins of purplish-pink. There are five petals and a similar number of sepals. The stamens number ten, and these will be found to be in two rings, the five opposite the petals being the largest. The leaves have an acid taste, hence the Latin name *Oxalis acetosella*, and the natural order to which the plant belongs, namely, *Oxalidaceæ.* Many people are of opinion that this is the real shamrock which is so largely worn on St. Patrick's day, but space does not permit me to enter into this controversy.

**The Primrose.**—What boy is there living in the country who does not early in the spring hie away to some secluded woodland to gather a bunch of pale primroses, risking a good hiding from the farmer or gamekeeper as a result of trespass? Shakespeare was a good observer of Nature—although he was not always accurate—and he has well called the primrose—

> 'First-born child of Ver,
> Merry springtime's harbinger.'

The sight of the first primroses of early spring gladdens our sense of sight as the plaintive call of the cuckoo does our sense of hearing, and how delightful it is to pluck the pale flowers from their leafy-strewn bed in the woodland glade! How pleasing to again inhale the cool sweet breath of springtime, to listen to the woodland chorus of quickly mating birds, to observe the first courageous butterfly upon the wing! The primrose belongs to the order *Primulaceæ*, and derives its name of primula from the Latin *primus*, 'first,' by reason of the early appearance of the flower. It is an early blooming plant, often opening its welcome blossoms in March, and in Sussex I have seen a great many in flower as early as Christmas Day! The beautiful pale sulphur colour of the flower is hardly met with in any other British plant, and as this favourite plant is so well known, it only remains for me to add that there are two kinds found, which differ in the position of the pistil and the stamens, one having the pistil protruding almost out of the corolla tube and much above the stamens (which are attached to the sides of the corolla tube), and another form in which the pistil is much below the stamens; these are called pin-eyed and thrum-eyed flowers respectively.

**The Marsh Marigold.**—Another beautiful plant which lights up the moist meadows with flaring gold in early spring is the marsh marigold, more commonly called king-cups. The following note as to the late (or early?) flowering of this plant and other wild flowers found in bloom during October is extracted from my diary for October, 1904:—

'I was very much surprised to find several marsh marigolds in flower on October 16 last. One usually associates this flower with early spring, and it is certainly quite the very latest (or earliest?) date I have ever recorded it in flower. On

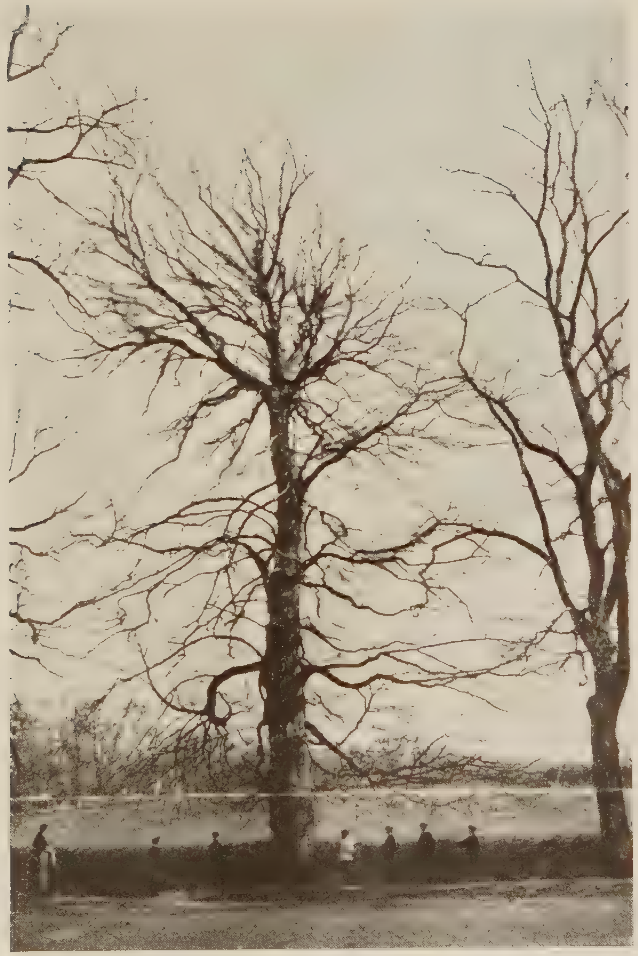


FIG. 92.—BEECH TREE IN WINTER.

[*see page* 269.

October 12, 1902, I found the dog violet in flower, and these two instances are the only two out-of-the-way records in my notebook of the autumn blooming of any typical spring flowers. On the same date, too, I found fifty-three further species of wild flowers in bloom, doubtless owing to the mild and open weather we have so far experienced during the present autumn. I do not know that any of the remaining fifty-three species on my list need special mention, excepting perhaps the common flax, field scabious, white campion, lesser stitchwort, oxeye daisy, white bryony, herb robert, St. John's wort, bramble, comfrey, and scarlet poppy.

'One of the latest wild plants to burst into flower is the ivy, and by the insect-life which one can see and hear around the blossoms during mid-October, it is pretty evident that several inhabitants of the insect-world appreciate the welcome honey which the ivy flowers supply to them. And this is all the more welcome because it is the season of the year when almost daily the list of wild plants in flower is being considerably lessened.

'This latter reminds me that we have experienced our first frosts and heavy gale of wind, and with them both, down have come the leaves toppling to the ground from their summer mansions. The whole countryside around wears its autumn dress now, and it is distinctly pleasing to ramble at this season by the river and notice the delicious fresh green of the plants that flourish in its limpid depths. The comparison of the two affords an interesting object-lesson—the pure, fresh, green, spring-like flush in the clear stream, the sere and yellow leaf on land! The hedgerows are festooned with berries of many species of wild plants, the black bryony being especially noticeable in this respect. I noticed on one particular plant three differently coloured berries, red, green, and yellow. Hard by, the traveller's joy is quickly seeding and merging into beautiful bunches of soft, downy-like clusters—hence one of its local and old-fashioned names of daddy's beard. These clusters will festoon the hedgerows for many weeks to come, and are in great acquisition for decorative purposes at Christmastide.'

To resume my remarks upon the marigold, it is mostly found in damp meadows. The flowers have no corolla, as in the closely allied buttercup, and what one would call the petals are, botanically-speaking, five petaloid sepals. It has large, fleshy leaves, and grows to a height of about 12 ins.; indeed, the whole plant, flower-stalk included, is very glabrous. The marsh marigold grows mostly in tufts or masses, and the large golden flowers and shining green leaves present a brilliant spectacle.

**The Wood Anemone.**—During your rambles through the woodland in the spring, you cannot

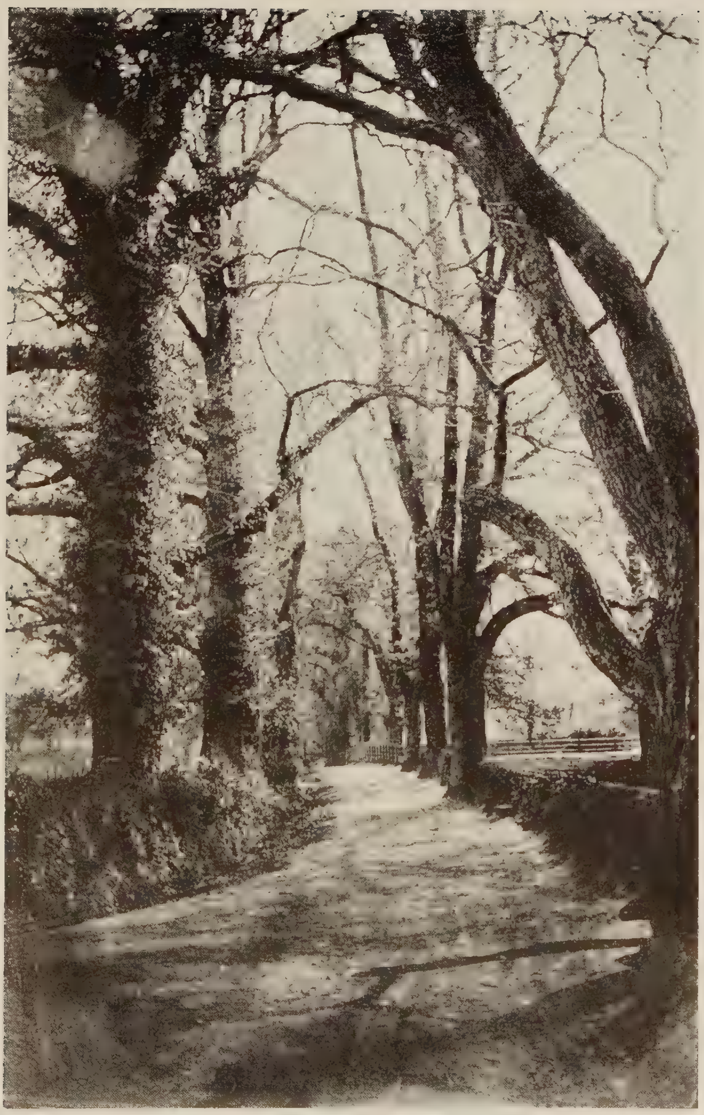


FIG. 93. —TREES PLANTED BY NATURE.

[*see page* 269.

fail to have noticed the beautiful, graceful anemones which raise their white, starry heads to the refreshing March breezes. It is not restricted to woods, however, for it may be found along sheltered hedgerows, the banks of which are often quite whitened by the snow-white blossoms. On a nice day the flowers open fully, but towards evening, or when the weather is dull, they hang their heads, for they revel in a clear, windy atmosphere, and love the invigorating spring sunshine. Our photographer has supplied us with a very charming picture of these beautiful flowers (Fig. 86), and here one may observe the large, green, deeply cut-up leaves. The flowers, although looking so exquisite in Nature's own garden, are very fragile, and are of little use for table decoration, soon withering when held in a hot hand. The anemone is referred to by many of the poets as the wind flower, and Bloomfield, in describing the springtime, refers to it in the line—

'Now daisies blush, and wind flowers fill with dew.'

Mr. Edgar Wright, Wellingborough, has very kindly forwarded me a dried flower of the common wood anemone, the curious point about it being that it has at the tip of one of the white sepals a green growth, as of a partly developed leaf. Looked at cursorily, the flower head appears very curious, a sort of floral optical illusion, but there is no doubt whatever that the green leaf-like appendage is attached to, and actually growing on, the sepal. My correspondent asks, 'Is this kind of growth common in flowers?'

To this I may reply that the curious growth above referred to is a deterioration which is common in the order *Ranunculaceæ*, and the growth may, shortly stated, be explained as one of the sepals reverting back to the foliage leaf, from which all floral organs are derived. To cite an instance of this, I might perhaps mention the sepals of the green hellebore, which resemble the foliage leaves, especially in colour. The order *Ranunculaceæ* is one of the simplest orders of plants, and this being so, very little progress has been made in evolution.

I believe I am correct in stating that this reverting back of the sepal to the foliage leaf is not so commonly found in the higher orders of plants, but is mostly common in the order *Ranunculaceæ*.

**A Useful Weed.**—One would imagine that no matter what refuse or waste heaps there might be, some species of plant would grow thereon, for we well remember that many of our botanical 'finds' have been made on the nearest refuse heap. In the recent report, therefore, of the chief inspector of Alkali Works, it surprised me to note that Dr. Alfred C. Fryer states that for years no plant, 'no blade of grass or humble weed,' would grow upon

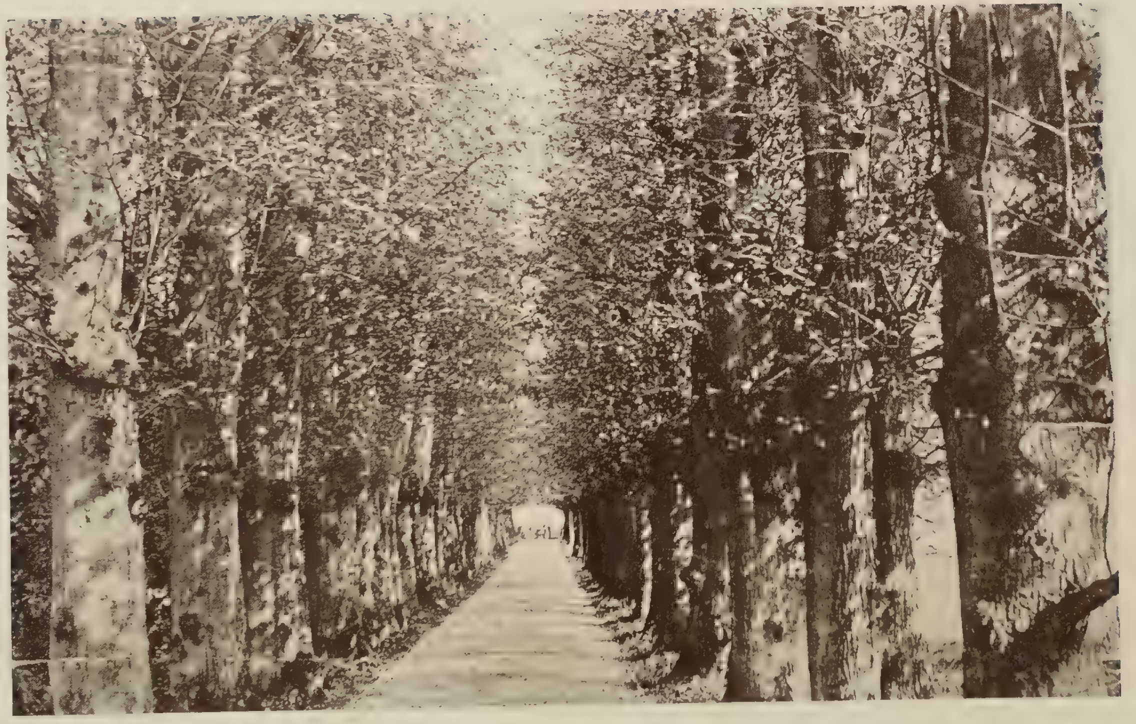


FIG. 94.—TREES PLANTED BY MAN.

[*see page* 269.

the unsightly heaps of alkali waste at Nekham, near Bristol. It is pleasing to record, however, that a plant has now been discovered which really will grow and flourish upon these heaps of unsightly waste, and this is the wall rocket, or narrow-leaved wall-mustard (*Diplotaxis tenuifolia*). It is a glaucous plant, 1½ ft. high, with flowers of a pale, lemon-yellow colour. It would be well worth experimenting, I think, upon other arid heaps of chemical refuse, heaps of coal-shale, and other unsightly heaps, to ascertain if this useful weed cannot be utilized as a means of improving the landscape, and covering up with verdure these ugly blots in the beauty of the countryside.

**The Daisy.**—The beautiful little daisies, which so brightly illumine the countryside in springtime, are too often disregarded by the rambler in the country. Closely examined, it is a really perfect little flower—indeed, a series of flowers, for it belongs to the *Compositæ*, and is made up of a number of florets, each a perfect flower in itself—and its life-history has much to unfold to us of wonderment and beauty. It is these common things in wild Nature which have been too heedlessly passed by as unworthy of notice, but it is now being found that the object-lessons to be learned from these common things are as interesting and wonderful as the rarer forms of plant-life. Indeed, so great an authority as Sir Robert Ball has stated that a whole lifetime devoted to the study of the insignificant-looking little daisy would not be sufficient to reveal all the wonders and the mysteries of its life. I close my few remarks upon this flower with some lines written by Dr. J. Mason Good—

'Not worlds on worlds in phalanx deep,
Need we to prove a God is here ;
The daisy, fresh from Nature's sleep,
Tells of His hand in lines as clear.
For who but He who arched the skies
And pours the dayspring's living flood,
Wondrous alike in all He tries,
Could raise the daisy's purple bud,
Mould its green cup, its wiry stem,
Its fringed border nicely spin,
That, set in silver, gleams within,
And fling it, unrestrained and free
O'er hill and dale and desert sod,
That man, where'er he walks, may see
In every step the stamp of God?'

**The Wild Rose.**—The accompanying photograph of wild roses, taken during the memorable bright summer of 1904 (Fig. 87), reminds me that it is many years since I can recall such a wealth of rose blossoms as during the aforesaid year. I never remember such gorgeous masses of wild rose blossoms, the wax-like blooms hanging in dense yet exquisitely graceful festoons upon the pliant branches. It was one of those floral sights which will linger in the memory for many a long day, and it is pleasing to me to be able to include here a pictorial memento of the wild rose year of 1904.

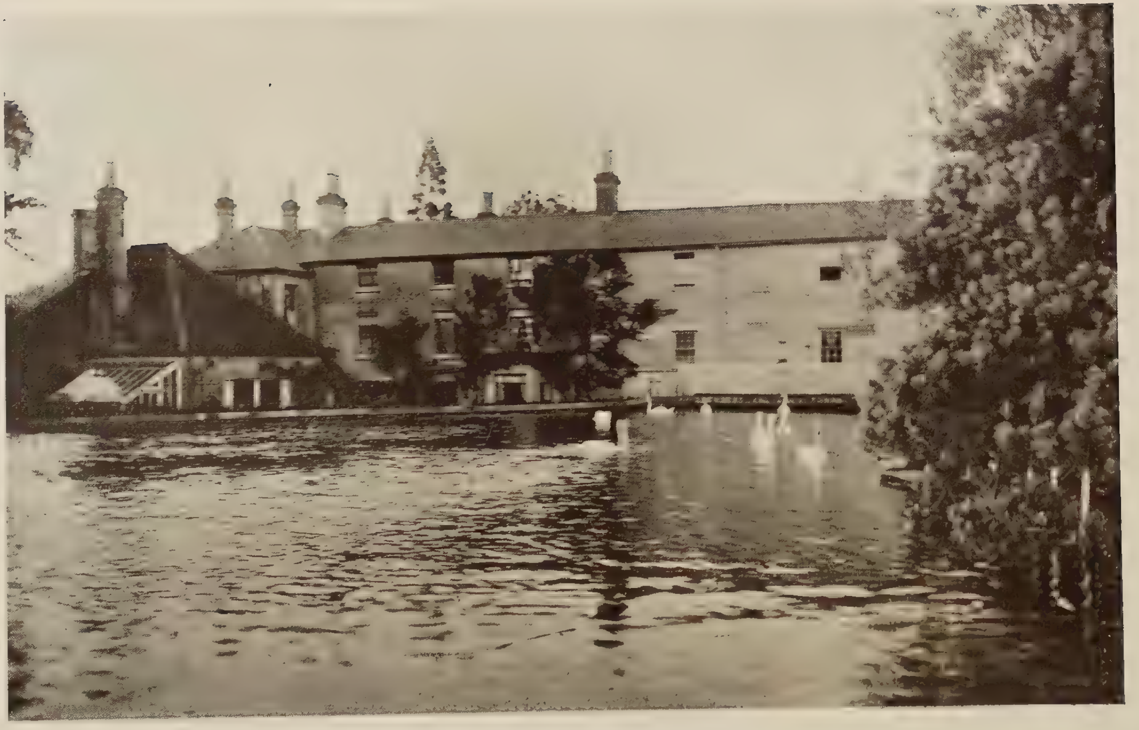


FIG. 95.—THE MILL POND.

[*see page* 270.

The roses in the photograph are dog roses; these usually have delicate pink petals, whilst the wild rose bearing white petals is known as the field rose. Of the two, the former is easily first favourite, but as with the anemone, these flowers are not to be plucked; they soon shatter when picked, and it is almost hopeless to take a bunch home for decorative purposes, unless specimens which have not yet unfolded their delicate petals are gathered. The flowers of the dog rose vary in colour; some are almost white and others a very deep pink, and they throw off a very pleasing aroma.

The field rose trails more than its near relative, the dog rose; the general form of the foliage is the same, if we except the more shiny surface, and the leaves are somewhat smaller. Unlike the beautiful dog rose, the flowers are almost scentless, and more commonly grow in little bunches. The stamens of the field rose are collected into a column which surrounds the pistil, whereas in the dog rose the stamens are free.

There are several other species of wild roses in our country, but considerations of space forbid their inclusion. It only remains for me to comment upon the beautiful seed-vessels, called 'hips,' which are so conspicuous an ornament to the hedgerows during winter-time. These scarlet hips are often used for medicinal purposes; beyond which, birds feed largely upon them, and especially during severe winters.

**The Colours of Early Spring Flowers.**—My attention has been called to the interesting fact that most of our early spring flowers are either white or yellow. In this particular may be mentioned the yellow flowers, there being the celandine, coltsfoot, crowfoot, dandelion, groundsel, cowslip, oxlip, furze, sallow, yellow rocket, goldilocks, and marsh marigold. Amongst the early white flowers are the blackthorn, greater stitchwort, garlic mustard, wild cherry, chickweed, vernal whitlow grass, hedge parsley, strawberry-leaved potentil, shepherd's purse, daisy, white dead nettle, shepherd's needle, wood sorrel, wood anemone, and snowdrop. Among early spring flowers which are neither white nor yellow may be noticed the dog's mercury, green hellebore, red dead nettle, heartsease, primrose, violet (there is, of course, the white violet, which should perhaps go in the white flowers list), ground ivy, cuckoo flower, wild arum, and wild hyacinth.

All these flowers may during a favourable and fairly forward springtide be found in blossom before the end of April, and it will be noticed that the lists of white and yellow flowers are far larger than the mixed colours. The point raised is an extremely interesting one, and I cannot offer any satisfactory reason for this, as my correspondent

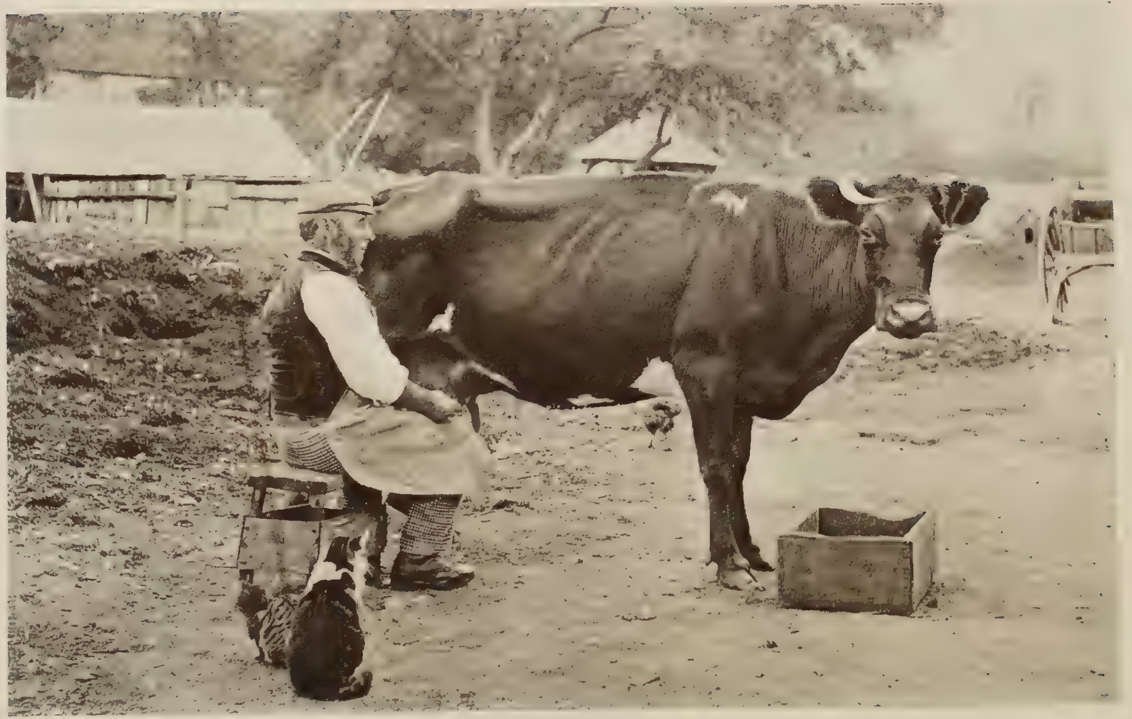


FIG. 96.—MILKING.

asks, unless it be due to the fact that in early spring the few insects which are on the wing are easily attracted by these simple colours, whereas when flowers are more numerous it is necessary for them to vie with one another as to their bright distinguishing colour for the purpose of attracting insects.

**Afforestation and an Arbor Day.**—In a speech delivered to the technical instruction classes of the Monmouth County Council at Abergavenny, the late President of the Board of Agriculture said he thought the question of afforestation demanded attention, 'since the trees were being used for paper making, and unless something were done there would soon be a timber famine.' This latter statement may or may not be open to doubt, but this question of afforestation brings to the fore again the exceedingly useful institution of an arbor day in every part of the land.

There is perhaps no more charming way of commemorating a holiday or festival than the planting of a tree in some waste or desolate place, and one has only to mention the wonderful success which has attended the establishment of an arbor day in America, to encourage Nature-lovers as to the good results which arboriculture brings in more than one direction. Beyond the fact that the planting of trees helps to beautify the landscape, and improve many a barren waste, the trees are happy sanctuaries for the birds and other forms of wild life; the roots aid in the consolidation of the soil; the foliage shades the ground, attracts moisture, and tempers the winds; the air is purified by the fragrance they exhale, and trees thus act as veritable sanitary agents in Nature; they supply man with fruits, fuel, raiment, medicine, and timber. Generally, then, trees are indispensable, and the wholesale destruction of them would be one of the greatest calamities that could possibly happen. For this statement of the case I am indebted to *The Poetry of Plants*, by Hugh Macmillan, in which is included a level-headed essay on the establishment of an arbor day, to which all lovers of the countryside should accord their earnest support.

**Date of Foliation of Trees and Shrubs.**—I am indebted to a correspondent for the following list of the foliation of trees and shrubs, made by Mr. Stillingfleet, in Norfolk, in the year 1765. A note added at the foot of the list states:—'In different years, and in different soils and expositions, these trees and shrubs vary as to their leafing, but they are invariable *as to their succession*, being bound to it by Nature herself.'

'Foliation of the trees and shrubs of this kingdom, by Mr. Stillingfleet, made in Norfolk, 1765'—

| | | |
|---|---|---|
| 1. Honeysuckle | Jan. | 15 |
| 2. Gooseberry | March | 11 |
| 3. Currant | „ | 11 |
| 4. Elder | „ | 11 |
| 5. Birch | April | 1 |
| 6. Weeping Willow | „ | 1 |
| 7. Raspberry | „ | 3 |
| 8. Bramble | „ | 3 |
| 9. Briar | „ | 4 |
| 10. Plum | „ | 6 |
| 11. Apricot | „ | 6 |
| 12. Peach | „ | 6 |
| 13. Filbert | „ | 7 |
| 14. Sallow | „ | 7 |
| 15. Alder | „ | 7 |
| 16. Sycamore | „ | 9 |
| 17. Elm | „ | 10 |
| 18. Quince | „ | 10 |
| 19. Marsh Elder | April | 11 |
| 20. Wych Elm | „ | 12 |
| 21. Mountain Ash | „ | 13 |
| 22. Hornbeam | „ | 13 |
| 23. Apple-tree | „ | 14 |
| 24. Abele | „ | 16 |
| 25. Chestnut | „ | 16 |
| 26. Willow | „ | 17 |
| 27. Oak | „ | 18 |
| 28. Lime | „ | 18 |
| 29. Maple | „ | 19 |
| 30. Walnut | „ | 21 |
| 31. Plane | „ | 21 |
| 32. Black Poplar | „ | 21 |
| 33. Beech | „ | 21 |
| 34. Acacia Robinia | „ | 21 |
| 35. Ash | „ | 22 |
| 36. Carolina Poplar | „ | 22 |

You British boys, who read this book, would do well to record in your note-books the dates when you notice the appearance of the first leaves upon the trees in springtime, as well as the first flowers, the earliest birds' nests, the first appearance of the fairy swallow, and the first time you hear the plaintive call of the cuckoo. There are many more entries which you can make with pleasure and profit; and in after years it is distinctly interesting, useful, and instructive to compare these dates, taking into due account whether the season generally was early or late.

**The Horse Chestnut.**—Perhaps, next to the oak tree, the horse chestnut is best known to all boys who live in the country, not because of the curious knotted buds which may be observed in the horse chestnut illustration (Fig. 88), nor because of the beautiful graceful festoons of white and pink blossoms. Why, then, do you know this tree so well? I think I can almost hear you supplying the answer! Because of the eagerness with which, as the first fruit of the horse chestnut becomes ripe, you scamper away to that favourite chestnut avenue or grove and search for the chestnuts wherewith to play 'conquers'! I have done it myself more times than I can recount, and even now as I sometimes gather a pocketful of the clean, crisp nuts from their prickly husky cradles, I have a sort of sneaking regard for those far-off days of schooltime, never, alas! to return.

Our three illustrations speak for themselves. First, the buds (Fig. 88), which are covered with a sticky substance, thus protecting them from the keen winds of early spring; second (Fig. 89), the flower; and third (Fig. 90), the prickly fruit. Now, when standing under a chestnut tree during a storm, have you ever noticed how the raindrops patter from leaf to leaf over your head, and how right underneath the tree it remains almost dry, the water eventually being thrown off all round the tree at some distance from the trunk? But what of this? you may say. You probably think—and think rightly too—that the dense mass of leaves prevents the rain percolating through, and the

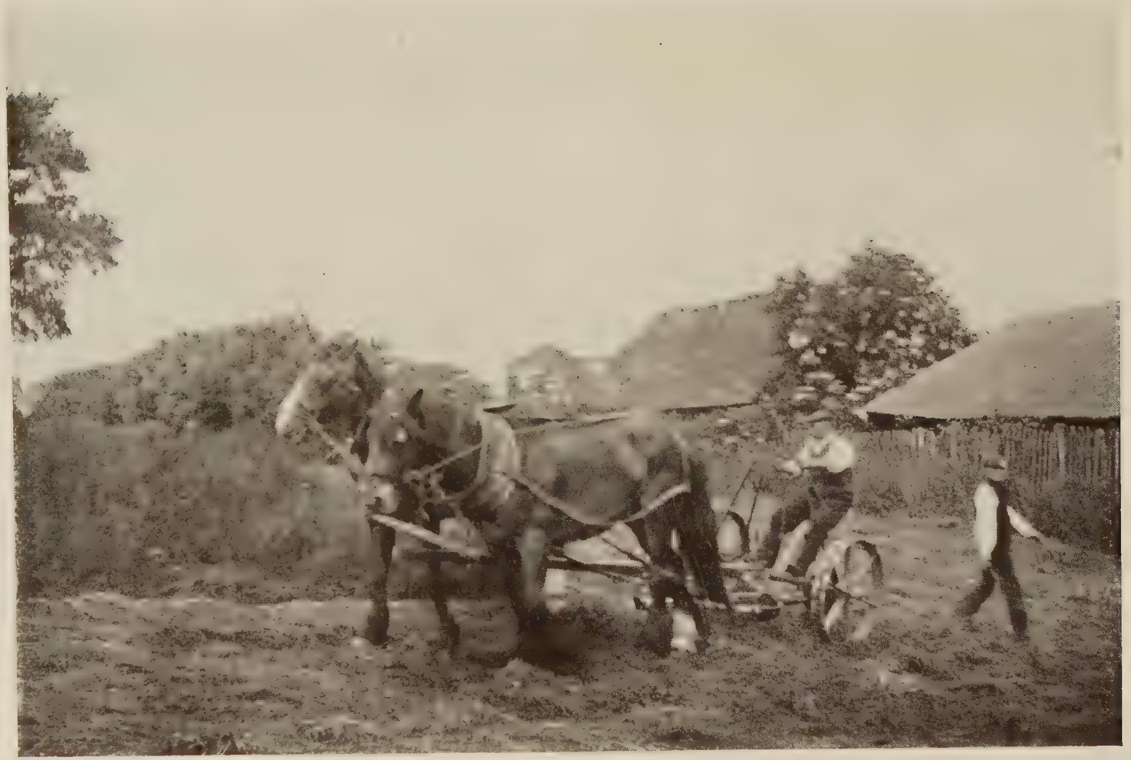


FIG. 97.—CUTTING THE HAY.

[see page 272.

water is thrown off from leaf to leaf outwardly, until eventually it reaches the ground at the bottom of the tree, where the branches are the longest and most spreading. Perfectly correct; but do you ever stop to think why this is? It is because this tree and several other trees and plants are what may be termed self-irrigating, that is, the young roots stretch out far away from the trunk, thrusting their crafty rootlets just under the surface of the ground some distance away, and these are part of the life of the tree, and require sustenance. The consequence is that when it rains, the young roots, which are for the most part *not* underneath the tree itself, receive the precious distilled raindrops in the manner which I have indicated. You will observe that in trees and plants which have not a wealth of foliage the water falls near the base of the plant or tree. Quite natural, you reply; there are no leaves in the way to prevent it doing so! Your answer is correct; but there is something more to be said. Such trees and plants as these do not throw out such spreading roots—they rather grow deep down in the soil, and the spotted orchis is a plant which specially occurs to me as I write—and it is necessary that the rain should reach the plant at its base to provide sustenance for it. This, then, is accomplished.

The pictures in the plate (Fig. 91) may be produced without a camera by putting the leaves themselves next to the sensitive plate or paper, and letting the light pass through them to the emulsion below. Very interesting pictures may thus be made, and pretty foliated designs, before the camera is acquired.

**Shapes of Leaves and their Value to Man.**—A whole chapter might be devoted to this most interesting branch of study, but space forbids. My last remarks bear upon this very subject in a large measure. Keep in mind that the colours and forms of flowers, the shape of the leaf, and other parts and functions of trees and plants are all specially adapted and developed to fulfil a purpose. They are not all arranged haphazard; they have not evolved to the colour, position, and structure in which we see them to-day through accident. There is design—and very wonderful design too—in Nature; and wherever there is design there is a Designer.

Now, not only are leaves especially interesting because of their various forms (see plate, Fig. 91) and colours, but leaves are the most important organs which a tree or plant possesses. By means of leaves they digest food, which is partly drawn up by the roots, dissolved in water. As noted in my remarks on afforestation and an arbor day on p. 263, trees especially are of great service to you and me, for the reason that the leaves take in and live upon the impure carbonic acid gas present in

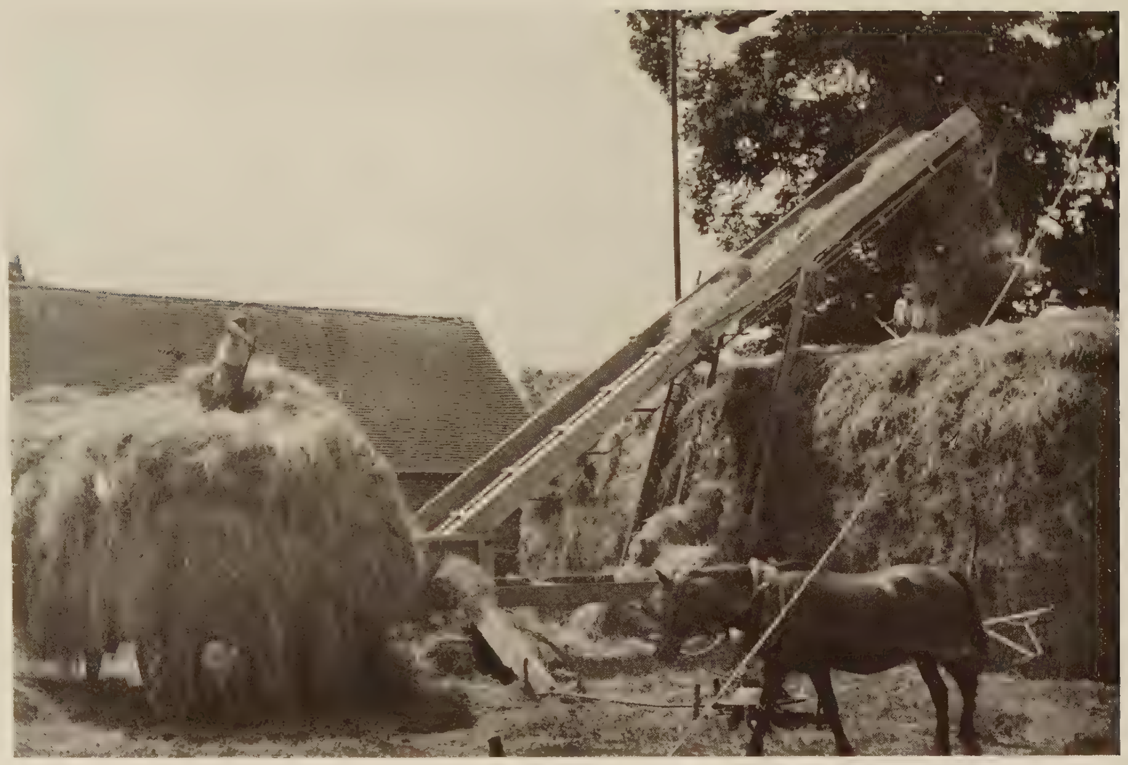


FIG. 98.—MAKING THE HAYRICK.

[*see page* 272.

the air which you and I breathe out of our lungs. During the daytime—more especially when the welcome and indispensable sun shines—leaves and other green parts of trees and plants not only take in the bad air but give off in exchange pure air in the form of oxygen, which you and I inhale, and without which we could neither live, move, nor have our being.

Space prevents me from commenting at any length upon the remaining photographs which accompany these closing pages. I would, however, specially direct your attention to the beautiful symmetry of trees as revealed by these charming pictures—especially when they have lost their foliage—and also to the two photographs (Figs. 93, 94), where you may observe with interest a natural avenue planted by Dame Nature herself, and an avenue of trees planted by man. I wonder which you like best, the handiwork of Nature or of man?

## CHAPTER IX

# ON THE FARM AND MISCELLANEOUS

THERE are many British boys who, on being asked what they would like to become in after years, reply, ‘A Farmer.’ It is the open-air life which makes many boys wish to become farmers; boys revel, or at least should do, in the pure unadulterated country. Boys, get as much exercise as you possibly can; cold and pure fresh air will never do you any harm, but keep out of draughts; avoid getting hot and perspiring, then standing about and catching a chill. Have a good rub down after your stiff performance on the cricket or football field or with the harriers. But do not be afraid of cold. Better be out in the teeth of an easterly blizzard, than hang about in a draughty, stifled room.

Now, to our subject. Life on a farm is an enjoyable one, no doubt; it has its advantages and its disadvantages, and a farmer's life is not always a ‘bed of roses.’ With these it does not come within my province to deal, and this chapter is

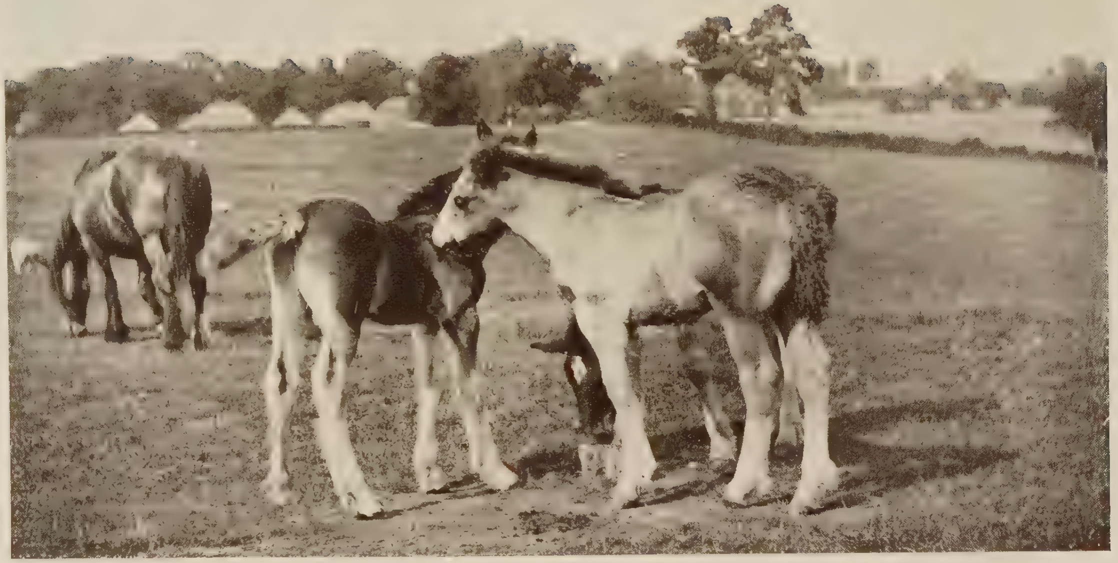


FIG. 99.---FOALS.

[*see page* 274.

—as a matter of fact—a pictorial record of the charming scenes and objects which can be depicted on and around a farm by the aid of a camera.

Look at our picture (Fig. 96), a fine docile cow being milked by the cowman, who has worked on the same farm much longer than he cares to remember. See how the cow is eyeing our guide, philosopher (or should it be photographer?) and friend, Mr. Sedgwick, as he prepares to take a picture of the cowman and his charge. Notice the contented look on the cowman's face, and his two cat companions hard by, the larger of the two seeming quite interested in the milking process.

A ramble round a farm is most enjoyable, because of the nature of the surroundings and the great variety of the objects and pursuits which one comes across. Here the cowman busily milking; there the man who looks after the poultry busily feeding the chicks; there the pigs grunting in their stye and wallowing in the mire (yet who says he does not like pork!); yonder the faithful dog snoozing near his kennel, but all excited and watchful when a stranger appears; on the old moss-grown roof of the farmhouse many varieties of pigeons alight, and then tumble, rather than fly, through the air; growing crops which will yield us corn wherewith to make bread; and on we might go. But the busiest time of all, perhaps, is when the hay and corn harvests commence. Our next picture (Fig. 97) illustrates a team of horses attached to a hay-cutting machine. Rapidly that field of rich waving grasses is being laid low, and under the welcome sunshine quickly dries, ready for raking into hay-cocks. Various tenants of the hayfield appear and disappear. First the reaper, then the hay-makers, or turners of the precious crops. Old men, young men, middle-age men; 'ancient Britons,' old enough to be our grandmothers, middle-age women, maidens fair, all lend a helping hand. The hay-cocks are all built up, and presently the empty carts come lumbering in at the gate towards the far end of the field, and hay-carting commences in earnest. And the men and boys are in earnest, too. They work faithfully and well, from early morn to dewy eve, under the sweltering sun.

In Fig. 103 you have a picture representing this latter scene. How enjoyable to sit quietly down and watch the progress of the hay-carting, and eventually follow the cart out of the field containing 'the last load!' Proceed to the stackyard. Here is a busy scene, all bustle and excitement. The stack assumes big proportions in almost less time than it takes to tell the story, and when at last completed the thatcher comes along—thatching is quite an art in itself—and securely roofs in safe from the rain and snows, the valuable contents which will go to swell the farmer's banking account

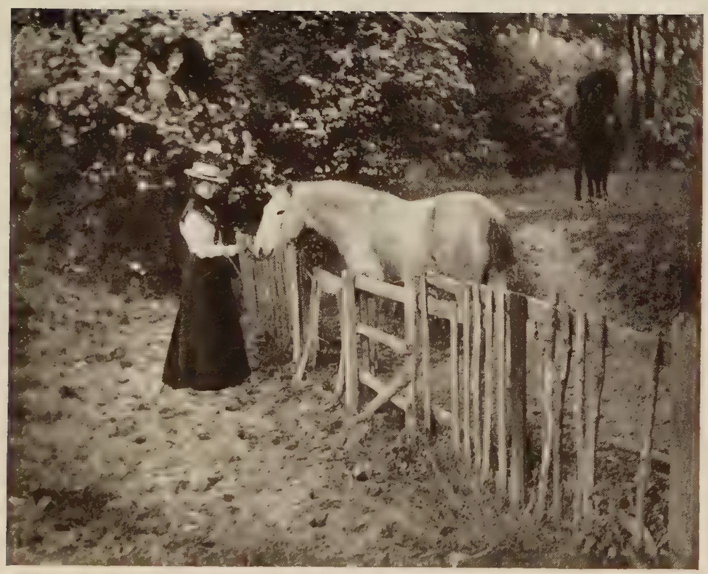


FIG. 100.—THE FAVOURITE GREY HORSE.

[*see page* 273.

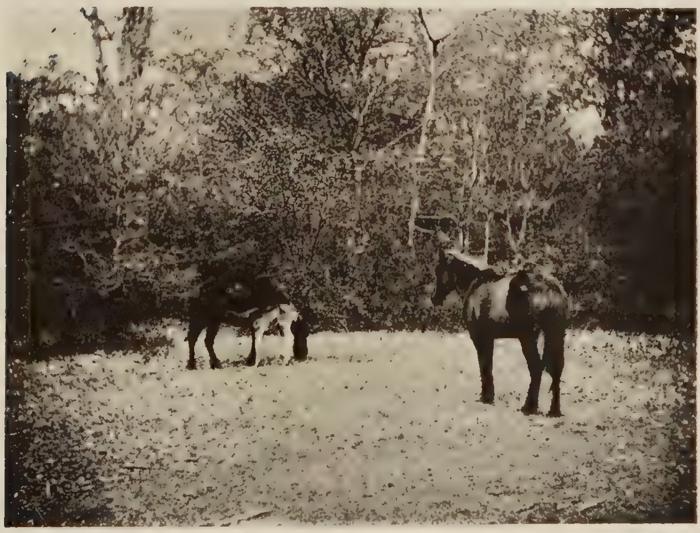


FIG. 101.—WILD HORSES IN THE NEW FOREST.

[*see page* 274.

FIG. 102.—GRAZING.

FIG. 103.—CARTING THE HAY.

FIG. 104.—A QUIET COUNTRY SCENE.

[*see pp.* 272-273.

if he can 'hold on' until hay fetches a good price.

Watch the ploughmen with their sturdy teams ploughing in deep furrows the rich brown soil; the sower of various seeds in the season of the year; the men and women hoeing; the hedger and ditcher; the potato weighing and the pits wherein to shelter them during the winter; the young lambs in the sheepfold in early spring; the foals in the pasture-lands gambolling in the sunshine. It is all very enjoyable and interesting, and a distinct education to participate in scenes in farming life.

On a quiet evening, when all is still, take a walk round a farm. Perchance you will meet hardly a living soul; perhaps the farmer himself taking a last look round and enjoying the pipe of peace. Another of our pictures (Fig. 104) displays one of these quiet country scenes towards the gloaming hour. A small company of pond-loving ducks just emerged from their favourite pond, and preparing to toddle (or waddle) home for the night. How delightfully peaceful is this scene!

You stand and admire a fine herd of cows grazing, speak a kind word to 'the favourite grey horse,' and watch with interest and pleasure the cattle 'chewing the cud.'

The four pictures (Figs. 101, 106, 107, 108) illustrate scenes other than those to be observed on the farm, and account for the 'Miscellaneous' in this Chapter. Mr. Sedgwick's clever study of wild horses in the New Forest in Hampshire will be gazed upon with pleasant memories by all who have visited this beautiful district of rural England. In the forest there are numbers of these horses, but, although they run about wild, they are all the property of ascertained owners. Besides horses there are wild donkeys, pigs, cows, sheep, deer, badgers, foxes, and squirrels in plenty in the forest. Of course all the domesticated animals, although roaming about in a fairly wild condition, have their owners, and many of the animals return at nightfall with wonderful regularity to their respective homes.

And now as to our concluding three photographs of a Grecian tortoise. In Fig. 106 one of these creatures is seen making his way towards a large stone, which he evidently wishes to mount, because he is interested in that camera and its owner, and is anxious to observe the proceedings from an exalted position. Fig. 107 shows the tortoise just in the act of mounting his 'throne,' and our last photograph (Fig. 108) depicts the sagacious creature well mounted and surveying the surroundings with a critical eye. All visitors to the Zoological Gardens should visit the small glass-house beyond the snake-house, and make themselves acquainted with the giant tortoises

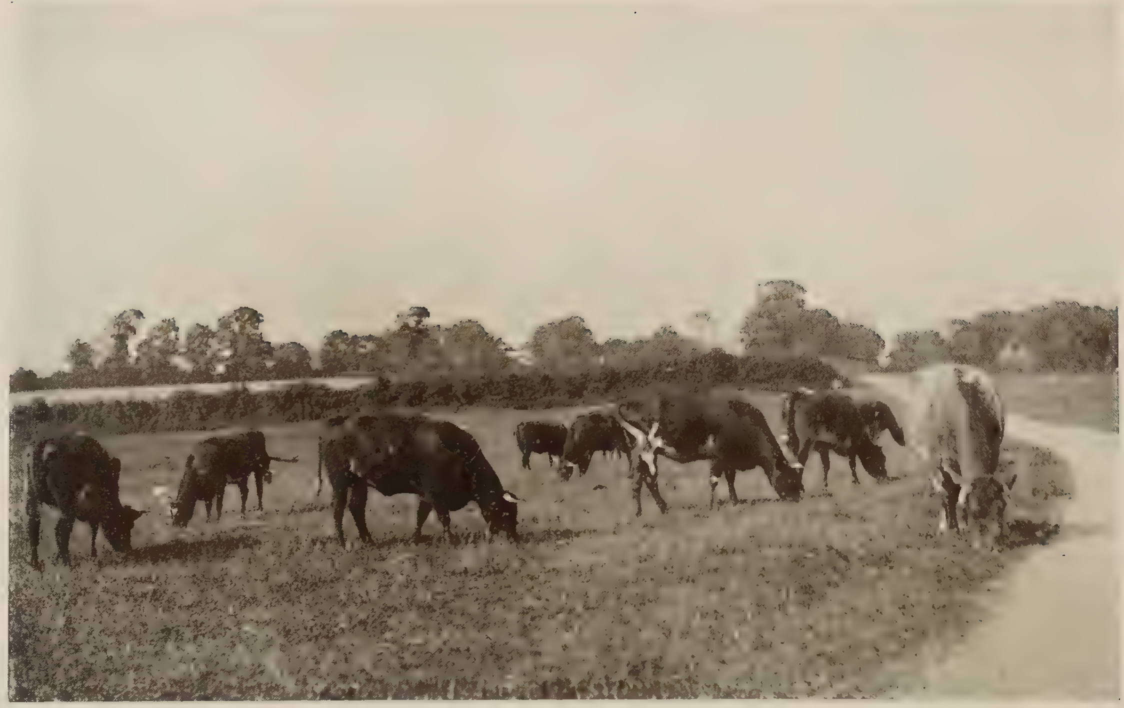
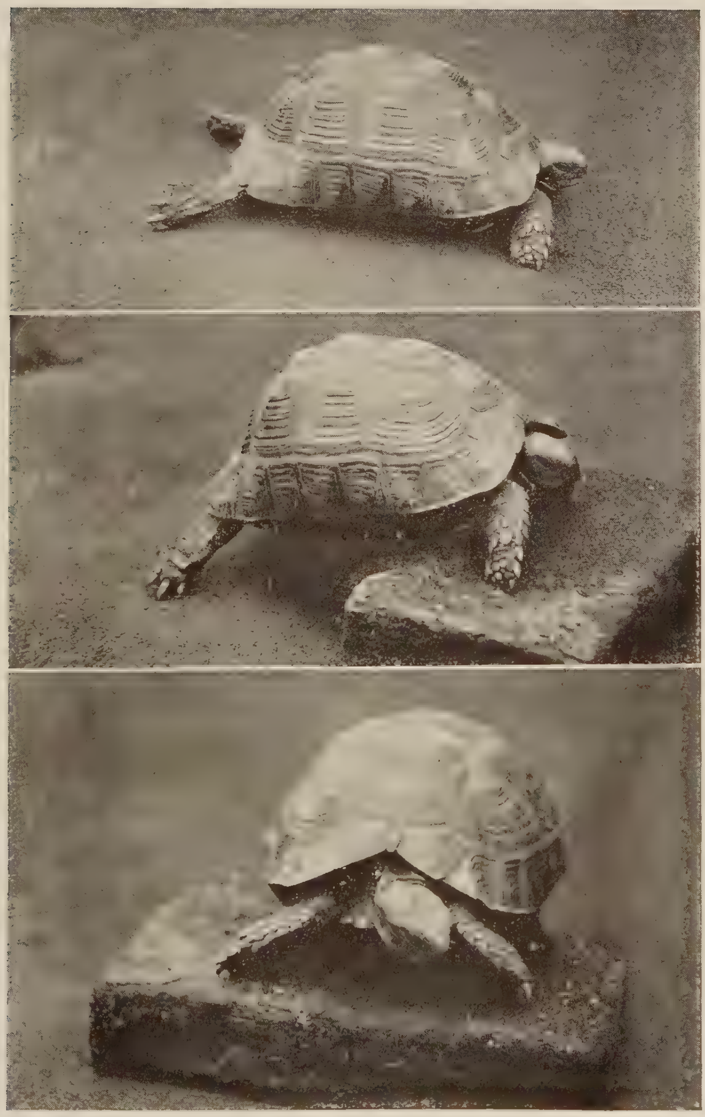


FIG. 105.—FINE CATTLE.

[see page 273.



Grecian Tortoise.

FIG. 106.—WALKING. FIG. 107.—MOUNTING HIS THRONE.

FIG. 108.—ON HIS THRONE.

[*see page* 274.

there ‘housed.’ These interesting animals live to a great age, and although they have indeed a heavy plate of armour to carry about with them, I have seen the Hon. Walter Rothschild comfortably mounted on one of their ‘backs,’ the wonderful animal bearing his bulky burden with ease and facility.

There must be many thousands of Grecian tortoises sold alive in England every year, and most of them die unnatural deaths, being literally starved by their ignorant owners. They should be fed regularly on bread and milk, as well as a vegetable diet—such as lettuce-leaves, etc.

In the winter they go to sleep, and should be provided with a dry bed. I know one tortoise which has been kept as a pet for ten years, and is as healthy as ever; he spends the winter in the coal-cellar, and on one occasion, at least, the servant used his hard back as a hammer to break up the coal. It is said that he slept serenely through it all!

Now my pleasant task has ended; I hope I have succeeded in writing for you an interesting and a useful book, and wish you every success in your Natural History studies.

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